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TRANSACTIONS

OF THE

ROYAL ACADEMY OF MEDICINE IN IRELAND.

TRANSACTIONS
OF THE
Royal Academy of Medicine
IN IRELAND.

VOL. XIII.

KING'S COLLEGE HOSPITAL
MEDICAL SCHOOL.

EDITED BY
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MEDICAL SCHOOL.

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ROYAL ACADEMY OF MEDICINE IN IRELAND.

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SESSION 1894-95.  
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[The figures prefixed denote the date of election. The figures appended to Names denote the number of Communications. Original Fellows are marked †.]

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1. The name shall be, "ROYAL ACADEMY OF MEDICINE IN IRELAND." (1887.)

Constitution.

2. The Academy shall consist of Fellows, Honorary Fellows, Members, and Student Associates.

Management.

3. The affairs shall be managed by a Council, consisting of the President, Ex-Presidents (1893), the six Presidents of Sections, the General Secretary and Treasurer, the Secretary for Foreign Correspondence, six Secretaries of Sections, and eight Councillors, being two representatives from the Medical, Surgical, Obstetrical, and Pathological Sectional Councils respectively.

Meetings.

4. The Meetings shall be General and Ordinary.

Publication of "Transactions."

5. The "Transactions" shall be published by the Council, subject to the provisions hereinafter contained.

Original Fellows and Members.

6. All the Members of the present Societies (Medical, Surgical, Obstetrical, and Pathological) shall be Original Fellows or Members, without entrance fee, on payment of the annual subscription on or before 31st December, 1882.^a

Fellows.

7. Fellows of the King and Queen's College of Physicians in Ireland, and of the Royal College of Surgeons in Ireland, shall be admitted, without ballot, on payment of the entrance fee and the subscription for the current year. All others, being Registered Medical Practitioners not directly or indirectly engaged in the sale of drugs, shall be proposed by two Fellows, and elected by ballot by the Council.

8. Candidates shall be proposed at one Meeting of the Council, and balloted for at the next—one black bean in four to reject.

- 8A. That all Rules referring to the admission of Fellows, Members, and Student Associates shall be interpreted as referring to Ladies as well as Gentlemen.

Privileges of Fellows.

9. Fellows only shall be eligible for office in the Academy. They shall have the privilege of attending all Meetings of the Academy, of making Communications, and of voting and speaking at such meetings. They shall also receive a copy of the "Transactions."

^a Those who have paid a Life Subscription to any of the above Societies will be admitted to the privilege of Fellows on payment of Member's subscription.

10. These privileges shall not be exercised by any Fellow in arrear with his subscription.

Honorary Fellows.

11. Honorary Fellows, limited in number to 25, may be nominated by the Council, and elected, on motion at a General Meeting of the Academy by a majority of at least two-thirds of those present and voting.

Members.

12. Any Registered Medical Practitioner may be elected as a Member, the election to be conducted in the same manner as that of Fellows.

Privileges of Members.

13. Members shall have the privilege of attending the Ordinary Meetings of the Academy, of making Communications, and of taking part in debate. They can purchase the "Transactions" at cost price.

Student Associates.

14. Registered Medical Students, of the third or subsequent years, may be elected as Student Associates in the same manner as the Members.

15. Student Associates shall have the privilege of attending the Ordinary Meetings of the Academy.

Annual Subscription.

16. Fellows shall pay £2 2s., and Members £1 1s. Student Associates shall pay 5s. The Subscription shall become due on the 1st of October in each year, and if the Subscription be not paid on or before the first Meeting in February, the defaulter shall cease to belong to the Academy, unless the delay shall be accounted for to the satisfaction of the Council. No Fellow shall vote at the Annual General Meeting who has not paid his subscription for the year. Medical Officers of the Army and Navy, and Registered Medical Practitioners not residing within 15 miles of Dublin, are eligible as Fellows of the Academy on payment of the entrance fee, and an annual Subscription of £1 1s.

Entrance Fee.

17. After admission of Original Fellows, all Fellows shall pay an entrance fee of £1 1s.

Council.

18. The Council shall meet on the first Wednesday in the month throughout the Session, or oftener should they see occasion—five to form a quorum.

19. Notice of all Extraordinary Meetings shall be transmitted by the Secretary to every Member of the Council. The President or any five Members of Council may call an Extraordinary Meeting of the Council. The Council shall determine questions by vote, or by division if so demanded, the President having a casting vote only. Any regulation of the Council shall have the force of a law, until submitted to the next General Meeting. The Council shall have the power of filling up any vacancies which may occur in the list of Officers of the Academy, except that of President, before the Annual General Meeting. If a vacancy in the office of President should occur, the General Council shall summon a Special General Meeting of the Academy to fill such vacancy. (1888.)

Sectional Councils.

20. There shall be six Sectional Councils elected by the Annual General Meeting in October, termed respectively—the Medical, the Surgical, the Obstetrical, and the Pathological, the State Medicine, and the Anatomical and Physiological Councils.

21. No Fellow shall be eligible as a candidate for election on more than two Sectional Councils, but no Fellow shall be eligible as a candidate for election on both the Medical and Surgical Sectional Councils. (1888.)

22. Each Sectional Council shall consist of the President of the Section and ten Members, one of whom shall act as Secretary to the Section ; except the State Medicine and Anatomical and Physiological Councils, which shall each consist of a President and six Members. (1888.)

Meetings of Sectional Councils.

23. Each Sectional Council shall meet on a fixed day at least one week before the Ordinary Meeting of their Section, three to form a quorum.

Powers.

24. Each Sectional Council shall have the power of making any such arrangements as it thinks necessary to carry on the work of the Ordinary Meetings which are under its charge, provided that such arrangements do not interfere with the general laws of the Academy ; and any Rules laid down by such Council shall have the force of laws at the Ordinary Meetings under its charge, until submitted to the General Council.

25. Each Sectional Council shall have the power of filling up any vacancies that may occur among its Members until the Annual General Meeting.

Committee of Reference.

26. The Council shall appoint a Committee of Reference, to report upon morbid growths and other specimens exhibited before the Academy ; of this Committee the Exhibitor shall, for the occasion, be a Member.

Officers.

27. A President, to be elected by the Annual General Meeting in October, and to hold office for three years.

28. The Presidents of the Colleges of Physicians and Surgeons for the time being shall be the Presidents of the Medical and Surgical Sections. The Presidents of the other Sections shall be elected by the Fellows at the Annual General Meeting, and shall hold office for two years. (1888.)

29. One General Secretary and Treasurer to be elected at the Annual General Meeting.

30. It is expedient that a fixed salary (of one hundred guineas) shall be paid yearly to the General Secretary in consideration of the fact that the editing of the “Transactions” is part of his duties.

31. One Honorary Secretary for Foreign Correspondence to be elected at the Annual General Meeting. (1888.)

32. The Councillors for each Section to be elected at the Annual General Meeting. Each Sectional Council shall elect two Members to act on the

General Council, except in the case of the Sections of State Medicine and Anatomy and Physiology. (1888.)

33. Two Members in each Sectional Council shall retire annually, and be ineligible for re-election for one year.

34. Six Secretaries, one for each Section, to be appointed by the Sectional Councils.

35. At all elections after the year 1882, any Fellow desirous of nominating a candidate for election shall, at least one fortnight before the Annual General Meeting, forward an application to the General Secretary to enter the name of such Fellow on the list of candidates for office, provided that the Fellow so nominated shall have consented to act. (1891.)

36. That all elections shall be by ballot.

Duties of Officers.

37. *The President* shall preside at the Annual and Special General Meetings and at General Council Meetings. In the absence of the President, the Chairman shall be appointed by the meeting. (1888.)

38. *The Presidents of Sections* shall preside at the Ordinary Meetings of the Academy, and shall also preside at the Sectional Council Meetings. In the absence of the President, the Chairman shall be appointed by the Meeting. (1888.)

39. *The General Secretary* shall attend all General Meetings of the Academy and General Council. He shall take minutes of such meetings, to be read at the following meeting.

40. He shall receive and have charge of all papers intended for publication in the "Transactions" of the Academy, after they have been handed over to him by the Secretaries of the several Sections.

41. He shall, on receiving notice from the Secretary of a Section, send out to all the Members notices of the title or titles of the paper or papers for the next Ordinary Meeting, with the name or names of the authors, and, so far as possible, of the subjects for Exhibition, with the names of the Exhibitors.

42. He shall arrange for the Exhibition of specimens and the reading of papers, which are forwarded to the Academy by those who are absent, or are not members.

43. The General Secretary and Treasurer shall receive all moneys, and lodge the same in bank to the account of the Academy, and all cheques shall be signed by the Treasurer and one other Councillor.

44. The Accounts shall be audited by two Fellows, not Members of Council, to be appointed by the President at some meeting previous to the Annual Meeting.

Duties of Secretaries of Sections.

45. To attend the Meetings of the Council of the Section and the Ordinary Meetings of the Academy, under the management of said Council, and to take minutes at such meetings, to be read at the next following meeting of that Section.

46. To keep such papers as the Sectional Councils deem worthy of publication, for the purpose of handing them over to the General Secretary.

47. To inform the Secretary of the Committee of Reference of any specimens referred to that Committee, and to transfer the specimens to that Secretary.

48. To give notice to the General Secretary, one week previously to the meeting, of the titles of papers for the evening, the names of the authors, and, so far as possible, the objects for Exhibition, with the names of Exhibitors, so that the General Secretary may inform the Members.

Meetings.

49. The Annual General Meeting to take place on the last Friday in October, for the election of Officers and Members of Council, and for the general business of the Academy.

50. Due notice of the meeting shall be given by the Secretary to all members at least three weeks previously. (1891.)

51. No motion involving a change of these Rules shall be brought before this meeting except one week's notice thereof shall have been given by the Secretary to each Member.

52. The President may—and shall forthwith, on receiving a requisition signed by seven Fellows, at any time—on giving one week's notice, summon a Special General Meeting, for the consideration of particular business, the nature of which must be specified in the letter of summons convening the meeting, and at such meeting no other business can be transacted. In the event of the President being unable, from any cause, or declining, to summon a Special General Meeting of the Academy, it shall be in the power of the General Council to summon such meeting. (1888.)

Ordinary Meetings.

53. The communications to be submitted to the Ordinary Meetings shall be grouped under the following heads :—Medicine, Surgery, Pathology, Obstetrics, State Medicine, and Anatomy and Physiology ; and the conduct of such meetings shall be in the hands of the several Sectional Councils, each Sectional Council to have the management of the Ordinary Meeting in rotation, as arranged by the General Council. (1888.)

54. The Ordinary Meetings shall be held on every Friday evening, from the first Friday in November until the last Friday in May, inclusive, at eight o'clock, except during the Christmas and Easter recesses.

55. All Fellows, Members, and Student Associates attending the meetings, shall write their names in the attendance book.

56. Any Fellow or Member may introduce two Visitors by cards obtained from the Sectional Secretaries.

57. Officers of the Army or Navy Medical Departments shall, on presenting their cards, be admitted to the Ordinary Meetings of the Academy.

58. No communication shall exceed twenty minutes in its delivery, nor any speech thereon ten minutes, except by permission of the Chairman. No one shall speak twice upon the same communication, except the author, who has the right of reply.

58 (a). A paper by any other than a Fellow or Member of the Academy shall not be read before the Academy unless the author of such a communication shall have obtained permission to do so from the Council of the Section before which the communication is proposed to be read. (1892.)

Ordinary Meetings.—Order of Business.

59. (1.) Chair to be taken at 8 30 p.m.
- (2.) Chairman to read list of specimens, &c., exhibited by card, together with the names of the Exhibitors.
- (3.) No Pathological Specimen shall be exhibited at any Section other than the Pathological and Obstetrical, except by card. This Exhibition shall not exclude any subsequent communication regarding it at the Pathological Section.
- (4.) There shall be no Exhibition of Specimens by card in the Obstetrical or Pathological Sections.
- (5.) Any member shall have liberty to exhibit any recent specimen at any of the meetings of the Obstetrical Section, provided it illustrates any question in gynaecology.
- (6.) At the meetings of the Obstetrical Section recent specimens may be exhibited, and the President shall invite discussion thereon, provided that such exhibition of specimens or discussion, if any, thereon, must terminate at 9 o'clock, p.m., but that, if necessary, they may be resumed after the papers for the evening have been read and discussed.
- (7.) Chairman to ask if any member has any observations to make or motion to propose relative to any living specimen on the List of Exhibition.
- (8.) Chairman to call upon the author of the first paper on the list to read his paper.
- (9.) Chairman to call upon members to discuss the paper, or, at his discretion, to take any other paper or papers on the list relating to the subject, and have the discussion subsequently on all such papers collectively.
- (10.) When the last paper has been discussed, the Chairman to ask if any member desires to speak upon any of the specimens exhibited by card.
- (11.) After the discussion upon any specimen, the Exhibitor has the right of reply.

Regulations regarding the Exhibition of Specimens by Card.

60. (1.) Any member may exhibit by card at any Ordinary Meeting, except at the meeting of the Pathological and Obstetrical Sections. At the meetings of the Pathological all specimens must be presented and described *viva voce*, and debate may be invited thereon.
- (2.) Notice shall, if possible, be given to the General Secretary, or the Secretary of the Section, on or before the previous Ordinary Meeting.
- (3.) Specimens must be in the room at 7 45 on the night of Exhibition.
- (4.) Specimens for Exhibition by card shall be open for inspection at 8 p.m.

- (5.) A card, containing all particulars for publication, shall be placed with the Specimen. Cards for this purpose are to be obtained from the Secretary.
- (6.) The Exhibitor should be present, and he shall furnish further details if asked for.
- (7.) Every Exhibitor shall submit the Specimen or Specimens on view to the Committee of Reference, if the meeting so decide.

Exhibition of Pathological Specimens.

61. No lengthened reference to treatment shall be allowed upon any Specimen, except by the express permission of the Chairman. Whenever it has been agreed that a Specimen exhibited at a Sectional Meeting of the Royal Academy of Medicine in Ireland shall be sent to the Reference Committee to report thereon as to its nature, the Exhibitor is to retain the custody of the specimen until he shall be summoned to a meeting of said Committee to be convened by its Secretary, on an early day, when he will attend and submit it for examination. (1889).

By-laws concerning "Transactions."

62. The "Transactions" shall consist of such Communications made to the Academy by or through Fellows or Members as may be deemed by the General Council suitable for publication; also, of discussions of importance or interest arising out of such Communications.

63. All Communications accepted by the Academy become the property of the Academy, but authors may also print their Communications, subsequent to the reading of the same before the Academy, in any publication in addition to the "Transactions." Papers shall be handed to the Secretary of the Section immediately after they have been read. (1891.)

64. The "Transactions" for the year shall be presented to all Fellows of the Academy who have paid their Annual Subscriptions.

65. The "Transactions" may be purchased by Members at cost price.

66. The Publication Committee of each Section shall meet not later than the Tuesday after each meeting of the Section, for the purpose of abstracting the proceedings—the abstract to be placed in the printer's hands on same evening, and forwarded to the editors of medical journals with the least possible delay. (1888.)

67. Contributors of papers are requested to send their papers to the Academy printer early enough to allow of their being put in type before the meeting, and read in proof. (1888.)

68. That on the evening of the day of meeting of the Sectional Council, when the papers for the next meeting have been decided upon, a circular be sent to each contributor informing him:—

- (1.) That he is expected to be ready or else take his place at the bottom of the list.
- (2.) That he must have an abstract ready with his paper, otherwise he will be noted in the published proceedings in such form as the Publication Committee think fit.

69. The General Council is empowered to defray the expenses in whole or in part of any illustrations which it may consider advantageous to the elucidation of the papers published by the Academy.

70. An abstract (prepared by the author) of each communication made at the Academy, along with a report of the discussions thereon, shall be furnished to the editors of such medical journals as may desire to publish them, and the authors of such communications shall be empowered to publish their papers *in extenso* in any periodical or periodicals they may think fit, such communications also to appear in the "Transactions," provided the Council consider them worthy of insertion.

Expulsion of Fellow or Member.

71. Expulsion of a Fellow or Member can take place only at a General Meeting of the Academy, on the motion of the Council, if two-thirds of the Members present shall vote for the same by ballot. Of such ballot the Council must give at least fourteen days' notice in writing to every Fellow of the Academy.

New Laws.

72. New Laws, or alterations in existing Laws, can be proposed only at the Annual General Meeting. Any Fellow proposing such alteration shall give notice to the General Secretary at least ten days before the General Meeting in October.

REPORT.

THE General Council beg to report that the number of Fellows for the Session 1893-4 was 244; of Members, 32; and of Students Associates, 5. The Fellows increased by 2; the Members decreased by 4, and the Students by 7.

In response to the invitation of the President of the International Medical Congress at Rome, the Council nominated as delegates, Dr. J. Magee Finny from the Section of Medicine; Sir Wm. Stokes from the Section of Surgery; and Dr. T. Donnelly from the Section of State Medicine.

The work of the Session has been vigorously carried on, and in the various Sections papers of the highest importance have been read, and will be published in the forthcoming volume.

The Council has continued the payment of fifteen guineas to the Royal College of Physicians and the Royal College of Surgeons, to meet in part the expenses incidental to the meetings.

During the Session a further sum of £50 was invested, and the amount now standing in Consols in the name of the Trustees is £751 4s. 2d.

The Council deeply regret to record the death of Mr. John Kellock Barton, F.R.C.S., who was from the first an active worker in the Sections; and of Dr. McVeagh and Mr. J. P. Baxter, Fellows of the Academy.

G. H. KIDD, *President.*

W. THOMSON, *General Secretary.*

General Treasurer's Report for the Session 1893-94.

RECEIPTS.

	£	s.	d.
To Balance in Bank	-	-	20 13 6
" Subscriptions	-	-	483 3 0
" Fannin, Illustrations	-	-	3 9 4
" Dividend on £596 2s. 4d., 2 $\frac{3}{4}$ Consols	-	-	15 18 0
" " £155 1s. 10d., 2 $\frac{1}{2}$ Consols	-	-	3 4 10

Total - - - - £526 8 8

EXPENDITURE.

	£	s.	d.
General Secretary	-	-	105 0 0
Grant to Royal College of Physicians	-	-	15 15 0
Grant to Royal College of Surgeons	-	-	15 15 0
Invested in 2 $\frac{1}{2}$ Government Stock	-	-	50 0 0
Illustrations, Vol. XI.	-	-	30 16 6
Stationery and Sundries	-	-	7 6 8
Servants	-	-	20 10 0
Reporters	-	-	29 8 0
Groceries	-	-	17 5 7
Milk	-	-	2 15 4
Fannin & Co., Vol. XI.	-	-	168 19 2
General Advertiser, Printing	-	-	35 7 9
Cheque Book	-	-	0 4 2
Falconer, Printing	-	-	23 15 2
Petty Cash	-	-	0 14 11
Balance in Bank	-	-	2 15 5

Total - - - - £526 8 8

We have examined the Accounts and Vouchers, and find the same correct.

October 9th, 1894.

{ G. P. L. NUGENT.
ROBERT H. WOODS, F.R.C.S.

WM. THOMSON, General Secretary and Treasurer.

Volume XIII. of the "Transactions" has been forwarded to the following:—

Lancet	-	-	-	-	London.
British Medical Journal	-	-	-	-	Do.
Medical Press	-	-	-	-	Dublin.
Hospital Gazette	-	-	-	-	London.
Dublin Medical Journal	-	-	-	-	Dublin.
London Medical Recorder	-	-	-	-	London.
Edinburgh Medical Journal	-	-	-	-	Edinburgh.
Glasgow Medical Journal	-	-	-	-	Glasgow.
Liverpool Medical Journal	-	-	-	-	Liverpool.
Bristol Medical Journal	-	-	-	-	Bristol.
Asclepiad	-	-	-	-	London.
International Medical Journal	-	-	-	-	Do.
Annals of Surgery	-	-	-	-	Do.
Provincial Medical Journal	-	-	-	-	Leicester.
Birmingham Medical Review	-	-	-	-	Birmingham.
Sanitary Record	-	-	-	-	London.
Practitioner	-	-	-	-	Do.
College of Surgeons	-	-	-	-	Dublin.
Do.	-	-	-	-	London.
Do.	-	-	-	-	Glasgow.
Trinity College	-	-	-	-	Dublin.
Royal University	-	-	-	-	Do.
Queen's College	-	-	-	-	Belfast.
Do.	-	-	-	-	Galway.
Do.	-	-	-	-	Cork.
Royal Dublin Society	-	-	-	-	Dublin.
College of Physicians	-	-	-	-	Do.
Do.	-	-	-	-	Edinburgh.
Do.	-	-	-	-	London.
Faculty of Physicians and Surgeons	-	-	-	-	Glasgow.
Victoria University	-	-	-	-	Manchester.
University College	-	-	-	-	London.
Harveian Society	-	-	-	-	Do.
Pathological Society	-	-	-	-	Do.
Clinical Society	-	-	-	-	Do.
Medical and Chirurgical Society	-	-	-	-	Do.
Apothecaries' Hall	-	-	-	-	Do.
King's College	-	-	-	-	Do.
University	-	-	-	-	London.
Do.	-	-	-	-	Glasgow.
Do.	-	-	-	-	Edinburgh.
Do.	-	-	-	-	Durham.
Do.	-	-	-	-	St. Andrews.
Do.	-	-	-	-	Aberdeen.
University College	-	-	-	-	Dundee.
Do.	-	-	-	-	Melbourne.
Do.	-	-	-	-	Adelaide.
Do.	-	-	-	-	Calcutta.

University College	-	-	-	-	Bombay.
Do.	-	-	-	-	St. Petersburg
Do.	-	-	-	-	Paris.
Do.	-	-	-	-	Vienna.
Do.	-	-	-	-	Berlin.
Do.	-	-	-	-	Brussels.
Do.	-	-	-	-	Bologna.
Do.	-	-	-	-	Madrid.
Do.	-	-	-	-	Amsterdam.
Do.	-	-	-	-	Christiania.
Do.	-	-	-	-	Stockholm.
Do.	-	-	-	-	Toronto.
Do.	-	-	-	-	Quebec.
Do.	-	-	-	-	New York.
Do.	-	-	-	-	Philadelphia.
Do.	-	-	-	-	New Zealand.
Do. Library	-	-	-	-	Tokio, Japan.
Medical Institute	-	-	-	-	Birmingham.
Dr. Ashby	-	-	-	-	Do.
Director-General Billings, Washington, U.S.					
Journal de Médecine et de Chirurgie (M. Lucas, Championnière), Paris.					
Archives de Chirurgie, 108 Boulevard St. Germain, Paris.					
Archiv für Klinische Chirurgie, Berlin.					
Centralblatt für die medicinischen Wissenschaften, Berlin.					
Zeitschrift für Chirurgie, Berlin.					
The Australian Medical Gazette, Sydney, N.S.W.					
New York Medical Journal, 72 Fifth Avenue.					
Journal, American Medical Association, Chicago.					
Bulletin de l'Académie Royale de Médecine de Belgique, Brussels.					
Medical Journal, Brooklyn.					
Naturforschende Gesellschaft, Dr. Rudolf Martin, Seefeldstrasse 119, Zurich.					
Academy of Medicine, 17 West 43d Street, New York.					
Library, College of Surgeons, Edinburgh.					
„ British Medical Journal, 429 Strand, London.					
„ Medico Chirurgical Society, Bristol.					
Sheffield Medical Journal, 17 Eyre Street, Sheffield.					
Archives Cliniques de Bordeaux, 46 Cours du Jardin-public, Bordeaux					
Medical Society of Victoria, Melbourne (Meyer and Metzler, Great Portland, Street, London).					
Quarterly Medical Journal, Dr. Coching, 277 Glossop-road, Sheffield.					
Medical Library Association, 19th and Stout Street, Denver, Colorado, U.S.					
Charlotte Medical Journal, Charlotte, N. C., United States.					
Society of Medicine, care of Dr. J. V. Wichman, Copenhagen.					
University of Sydney, care of Young J. Pentland, 88 West Smithfield, London, E.C.					
Editor, Archivio d'Ortopedia, via S. Calimbro 31, Milan.					
Library, Medical Society, Royal University, Upsala.					
National Library, Dublin.					
Journal of Comparative Neurology, Denison University, Granville, Ohio, U.S.					
Dr. Stockwell, Medical Age, Detroit, Michigan, U.S.					

TRANSACTIONS

OF THE

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

A CASE OF SMALL-POX AND ITS LESSONS.

By JOHN W. MOORE, M.D., M.CH., B.A. UNIV. DUBL.;

Fellow of the Royal College of Physicians in Ireland;

Physician to the Meath Hospital.

[Read in the Section of Medicine, November 16, 1894.]

EARLY on Friday, September 21, 1894, I was asked to visit a professional friend, who wrote to me as follows:—"I have been in bed the past two days—some sort of feverish attack—and would like you to see me."

CASE.—On visiting the patient about 1 p.m., I found that after some days of ill-health, during which he felt out of sorts and lost his appetite, he had fallen acutely ill on the evening of Tuesday, September 18. The first symptoms were chilliness, pains in his limbs and back, and nausea. The temperature rose quickly and reached 103.2° on Thursday evening, the third day of the attack. He was seen and prescribed for by Dr. R. S. Wayland, who looked upon the attack as one most likely of enteric fever.

At the time of my visit, the tongue was thickly coated with a yellowish, offensive fur, the throat was red, pulse 84, temperature 102.3° . There was a good deal of sweating. A local and intense scarlatiniform rash spread from the axillæ outwards across the pectoral regions, embraced the flexures of the elbows, and radiated

from the groins upwards over the abdomen for some inches and downwards half way towards the knees, as well as backwards across the buttocks. The spleen was only slightly, if at all, enlarged. On the abdomen three or four small circular rose-spots, firm and resistant to the touch, were scattered far from one another. Across the front of the wrists, also, a few minute vesicles were observed. The urine was clear and free from albumen. The patient himself believed the attack was one of scarlatina, but such an assumption was negatived by the slowness of the pulse, the trivial nature of the throat affection, and the local distribution of the rash. While not excluding the diagnosis of enteric fever, the sudden onset of the attack, the absence of marked enlargement of the spleen, and the presence of a local scarlatiniform rash, which at once struck me as of diagnostic importance—not less positive than negative—led me to the conclusion that the disease was in reality small-pox.

A few questions, cautiously worded, elicited the information that on Saturday, September 8—exactly *eleven days* before the initial symptoms showed themselves, Dr. A. B. saw a case of small-pox in the stage of invasion. He continued in attendance until Thursday, September 13, when the patient was sent to hospital. The patient, and also her infant child, died afterwards of the disease. He saw another case of small-pox on Saturday, September 15, but only on one occasion.

At our consultation, I said to Dr. Wayland that it was easier to say what the disease was not than what it was. It was not scarlatina. It might be either enteric fever or small-pox. I was inclined to think it was the latter.

The temperature rose to 105.2° the same evening and fell only to 104.0° the following morning. The conjunctivæ were deeply injected, and the face was flushed. There had been very little sleep. To relieve these symptoms and also under the belief that the case was one of small-pox and that local depletion would lessen the eruption about the face, I applied a leech behind the ear and allowed the bite to bleed into a poultice for twenty or thirty minutes. The patient had been taking salicylate of sodium to reduce temperature and relieve the distressing rheumatoid pains. This remedy was now discontinued and sulphurous acid was prescribed for internal use.

On Saturday morning, September 22, the fever still ran high. A single vesicle had appeared on the left side of the velum palati.

The vesicles about the wrists had grown larger. The "rose-spots" on the abdomen were more numerous and harder. I said to Dr. Wayland that there was now little doubt as to the nature of the malady, which was almost certainly small-pox. In order, however, to set the question of diagnosis definitely at rest, we agreed to meet again at night. This we accordingly did. There was now no room for doubt. The true rash of small-pox was coming out on the palate, face, wrists, trunk, and extremities. It was profuse within the limits of the initial erythema—about the axillæ, elbows, groins, buttocks, and feet. The pulse was 96, and the temperature had again risen to 105.2° . Two grains of calomel, which had been given after our morning visit, acted freely, with the aid, however, of a simple enema. As Dr. Wayland was attending Dr. A. B.'s patients, some of whom were ladies shortly expecting their confinement, he now surrendered the case into my hands.

As my attention had for some time previously been riveted on the treatment of small-pox by the exclusion of the chemical rays of the solar spectrum, I determined to test the method in the present instance. It happened by chance that the large double window in the sick-room was covered from top to bottom with a deep-red thick curtain. This was kept constantly drawn, while another red curtain was hung entirely across the folding doors communicating with a spacious front drawing-room, in which one of the windows was kept widely open both by day and by night. A brisk fire in the grate further secured the freest ventilation in both the sick-room and its ante-chamber. During the remainder of his illness, the patient repeatedly expressed the comfort which the subdued red light afforded him.

On Sunday, September 23 (sixth day), the fever gave way quickly. Sleeplessness was still a prominent symptom. For its relief, an opiate with bromide and digitalis was ordered and acted with partial success. As the rash was in places dark and showed signs of hæmorrhage into the vesicles (*Variolæ hæmorrhagicæ pustulosæ*, of Curschmann), I ordered the following mixture:—

R. Tinct. Ferri Perchloridi, ʒij.
 Acid. Phosphorici dil., ʒiiss.
 Glycerini, ʒiiss.
 Tinct. Aurantii Recentis, ʒss.
 Aquæ Chloroformi, ad ʒvj.

M—ft. mistura. *Signa*: "One-sixth part every sixth hour."

As the first sound of the heart was not strong I ordered a claret-glassful of good burgundy to be taken every six hours alternately with the iron mixture. This treatment was persevered in for several days, the interval between the doses of both medicine and wine being soon extended from six to eight hours.

A sharp secondary fever followed the remission of temperature observed on the sixth and seventh days. But the thermometer rose only to 103° on the evening of the ninth day, thus falling short of the fastigium of the primary fever by 2.2° . The rash never became markedly pustular, although the contents of the vesicles were lactescent and opaque. The local treatment consisted in the smearing of the face and other parts with carbolised vaseline ($2\frac{1}{2}$ per cent. in strength), followed by free use of boric acid as a dusting powder. Troublesome pruritus about the scrotum was at once relieved by painting over the part with a ten per cent. solution of hydrochlorate of cocain. There was no albuminuria at any time. The tongue gradually cleared, and sleep and appetite returned. From the eleventh day convalescence went on apace. The feet became very sore for a time, and the skin was shed in immense flakes, leaving considerable ulceration and pitting afterwards. Linimentum calcis (Carron oil) was freely applied on lint, and gave great and immediate relief. Warm baths were begun on the ninth day, and were continued to the close of convalescence every night or every second night.

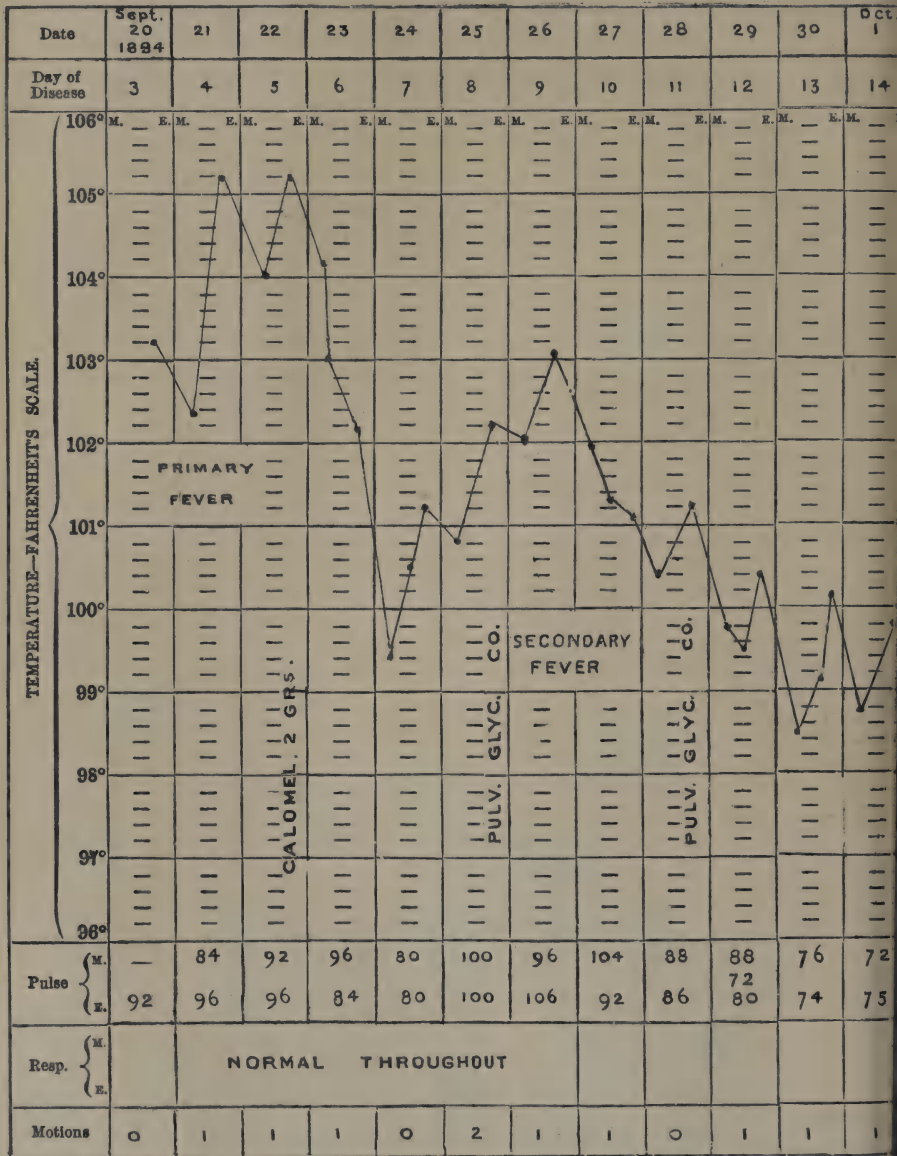
Very strict precautions were taken to prevent the spread of the disease. No one entered the sick-room for several weeks except the patient's wife, the nurse, and myself. Both wife and nurse were revaccinated as soon as the nature of the illness declared itself. The shed scales of epidermis were carefully collected and burned. Soiled bed linen and personal attire, as well as towels, &c., were immersed in strong solutions of Jeyes' disinfectant fluid before removal from the sick-room. The evacuations were also, as far as possible, disinfected as soon as passed. In a word, the hygiene of the sick-room was kept up to the highest standard. The accompanying temperature-chart is a very typical one of semi-confluent small-pox.

Remarks—The duration of the period of incubation was definitely ascertained to be *eleven days* in this case. It is interesting to note that the poison was taken into the system

CLINICAL CHART OF TEMPERATURE

Name, A.B.

Age, 35



quite unconsciously. At the time the disease was contracted, no suspicion of exposure to the virus of small-pox was entertained. Again, there was a long stage of invasion in A. B.'s case. The prodromal fever began on Tuesday. The rash did not show itself until Friday (the fourth day), and even then it was very slow in developing. The case, no doubt, was one of discrete small-pox, but the rash was wonderfully profuse within the limits of the prodromal exanthem and on the feet. In these situations the skin was utterly destroyed. Pustulation may, at the same time, be said not to have occurred at all; and this leads me to speak of the treatment of small-pox by red light—a mediæval method which has been unexpectedly and quite recently revived in a very earnest way.

As an introduction, I may be permitted to quote a passage which I wrote some three years ago, when discussing the curative treatment of small-pox^a—"In the fourteenth century flourished John of Gaddesden, author of a curious book entitled *Rosa Anglica*, court physician of the day, but 'a very sad knave,' as Sir Thomas Watson calls him. This representative physician of the Age not only put the unhappy small-pox patient on a 'hot regimen,' administering wine and cordials, piling on bed-clothes, and jealously excluding every breath of fresh air from the sick-room, but *surrounded the half-suffocated victim with red curtains, red walls, and red furniture of all kinds—for in this colour there was, he pretended, a peculiar virtue.*

"To the celebrated Thomas Sydenham, who lived in the seventeenth century, belongs the credit of substituting for this barbarous and disastrous system of treatment the opposite or 'cooling regimen' in small-pox, and this practice is pursued to the present day with the happiest results."

^a "Text-book of the Eruptive and Continued Fevers." Dublin: Fannin & Co. 1892. Pages 113 and 114.

In quoting these paragraphs, I have ventured to give emphasis to one passage by the use of italics—it is that in which reference is made to the treatment of small-pox by red light. So far as this is concerned, after the lapse of five centuries, the therapeutic skill and clinical acumen of John of Gaddesden are at last vindicated, and with the poet Chaucer we may say:—

“ For out of the old fieldes, as men saithe,
Cometh all this new corn from yere to yere,
And out of old bookes, in good faithe,
Cometh all this new science that men lere.”

In a paper in the *Lancet* for June 29, 1867, entitled, “How to prevent Pitting of the Face by Small-pox in Persons Unprotected by Vaccination,” Dr. C. Black, of Chesterfield, came to the conclusion “that the complete exclusion of light from the eruption of small-pox in persons unprotected by vaccination effectually prevents pitting of the face.” From his knowledge of the influence of *light* on the growth and development of both plants and animals, and of the destructive action of oxygen on diseased tissues, Dr. Black determined to exclude both these agents from the faces of his small-pox patients. The results were eminently satisfactory.

In the *Lancet* for February 4, 1871, Dr. J. H. Waters, of London, published a short paper on the “Action of Light in Small-pox.” His observations were apparently made quite independently, and led him to assert that “if white light is entirely excluded from the patient, there is no doubt the disease is less severe; by white light I mean daylight. The room being so darkened that not even a single ray can enter it, and a candle being used instead, the effect is to arrest the disease at the papular or vesicular stage; it never becomes purulent . . . there is no intense pain; even the itching is trifling; and the smell, so annoying to all concerned, is, if not altogether removed, so diminished as to be

easily borne. The earlier in the disease the room is darkened, the more certain will the effects I have named follow; but if during the stages of primary fever or eruption the white rays of light are admitted, only for a short time, it is sufficient to cause great mischief, and to nullify to an immense extent all that has been before done."

In a subsequent paper, published in the *Lancet* for April 22, 1871 (page 534), Dr. Waters observes:—"In disease nature frees herself from the morbid poison by the action of the glands, and of these, perhaps, the most used are the sudoriparous and the sebaceous. It is by these the poison is eliminated in small-pox; but by their excessive action inflammation is set up, the nerves become hypersensitive, they magnify the effect of external stimulants, and by reflex action the inflammation of the part is increased, when thus exposed to what in ordinary circumstances would be but healthy and desirable stimulation; the reflex inflammation preventing the natural elimination of the disease, and the two causes increasing its severe symptoms."

In the *Lancet* for July 1, 1871 (page 9), Dr. W. H. Barlow, of Manchester, bears additional testimony to the usefulness of the exclusion of light in the treatment of small-pox. He recalls an experiment recorded in the *Lancet* of August 24, 1867, where part of the face of a small-pox patient was covered with a warm solution of coloured gelatine (to exclude the actinic rays), the rest of the features being left exposed to the full action of the light, with the result of showing a marked contrast between the two portions.

Dr. Barlow wisely advocates the necessity of exercising care and judgment in the application of the method of treatment by exclusion of light, suggesting that only the actinic rays of the solar prism should be cut off, in order to avoid that depressing effect upon the mind which total darkness would probably cause, and which seems to Dr. Barlow to

have much to say to the fatal result. Again, "we must not forget that the outward manifestations" of small-pox, which are shown to be controlled by the exclusion of light, "do not form the whole of the disease, and that, grave as may be the consequences of their unchecked career, there are more serious forces behind, for which these form the outlets, and as it were the safety-valves of the system."

According to the *Lyon Médical* of June 12, 1892, Gallavardin,^a had during seven years seen marked effects from the treatment of small-pox in the dark, but only when it was thoroughly carried out. Suppuration and pitting were prevented by the treatment.

In a suggestive paper on the effects of light upon the skin,^b Dr. Niels R. Finsen, Prosector of Anatomy, Copenhagen, observes that our knowledge of this subject has greatly increased within recent years. It was formerly supposed that it was the solar heat rays which were especially injurious in the so-called solar-eczema, which the name *Erythema*-or *Eczema-caloricum* also shows. In the same way pigmentations were supposed to be due to the caloric rays, but to be independent of wind and weather.

From the investigations, especially of Unna of Hamburg,^c Widmark of Stockholm,^d and Hammer of Stuttgart,^e it has, however, been now absolutely determined that it is exclusively the chemical rays in sunlight, especially the ultra-violet rays, which are active in causing both pigmentation and solar eczema. Hammer and Widmark have shown in their papers that precisely the same phenomena may be produced by strong electric light, since this light is particu-

^a Traitement de la variole par l'obscurité solaire.

^b Om Lysets Indvirkninger paa Huden. Hospitalstidende, 4 Række, Bd. I., No. 27. Kjöbenhavn, 5 Juli, 1893.

^c Ueber das Pigment der menschlichen Haut. Monatsheft für prakt. Dermatologie 1885. Page 285.

^d Ueber den Einfluss des Lichtes auf die Haut. Hygiea. Festband, No. 3

^e Ueber den Einfluss des Lichtes auf die Haut. Stuttgart, 1891.

larly rich in chemical rays. Against heat as the active agent, the facts, for example, detailed by Widmark about Arctic travellers, and by Hammer about tourists on glaciers, tell in the clearest way. These individuals, even with the temperature below freezing point, may suffer severely from light-erythema, which is due to the strong reflection of the light from the ice-fields.

The view that it is the chemical and not the caloric rays which are active, and also that the skin affection induced by strong electric light is identical with solar erythema, was first advanced by Charcot in 1859,^a but was not proved scientifically until Widmark's experiments in 1889.

The so-called chemical rays, which are essentially situated in the blue and violet, and especially in the ultra-violet, part of the spectrum, are the most refrangible of the rays of light; in this area the chemical activity is strongest, the caloric activity is weakest. The converse holds good in the other end of the spectrum, where are found the red and ultra-red rays which are the least refrangible. Here the caloric activity is greatest and the chemical activity least.

Dr. Finsen does not appear to have made a practical trial of the method of treating small-pox suggested by him at the close of his paper—that is, by complete exclusion of daylight or, what would doubtless have the same effect—by the use of tightly-closing red curtains, or windows of red glass. In the number of the *Hospitalstidende* for September 6, 1893, however, he writes an interesting letter on the "Treatment of Small-pox," in which he states that in an epidemic which prevailed at Bergen in the summer of 1893, Dr. Lindholm, Medical Officer of Health (Stadsfisikus), and Dr. Svendsen, Visiting Physician of the Municipal Hospital, had tried his method with gratifying success. In a letter dated August 2, Dr. Lindholm wrote to Dr. Finsen as follows:—

^a Comptes rendus de la Société de Biologie, 1859.

“I have the pleasure to inform you that the proposed treatment of small-pox seems to have an excellent effect, as the œdema quickly subsides and suppurative fever fails to appear.”

Dr. Svendsen published an account of this epidemic in the *Bergen Medicinsk Revue* for October, 1893. He bears eloquent testimony to the efficacy of the treatment of small-pox by exclusion of the chemical rays of light. In his experience the vesicles dried up without becoming purulent; in this way suppurative fever was avoided, so that the disease became less dangerous, less protracted, and less painful owing to the absence of ulceration. Furthermore, pitting did not occur. Dr. Svendsen thus expresses himself:—
“The clinical records of the patients treated according to this plan show the following differences: *The suppuration stage—the most dangerous and most troublesome in variola—was slurred over; no rise of temperature, no œdema, and so on, occurred. The patients passed at once from the vesicular stage, which seemed to me somewhat protracted, into that of convalescence, and were saved from the ugly pitting.*”

Dr. Svendsen describes a couple of interesting control-experiments which he made. He sent a patient out into the daylight after desiccation had occurred everywhere except on the hands, on which there were still a number of vesicles, with the result that these vesicles passed on into suppuration, and the patient had small, not deep, pits on the back of his hands. A second patient was subjected to the same procedure with a like result.

More recently the method has been tried, with less striking though still encouraging results, by Professor Juhel-Renoy,^a of Paris. He believes that the mere fact of protecting the patient from the action of the chemical rays of sunlight

^a *Bulletins et Mémoires de la Société médicale des Hôpitaux de Paris*, 14 Dec., 1893.

cannot *prevent* suppuration, but it lessens suppuration—"c'est un procédé d'atténuation de la suppuration"—it is capable at all events of rendering the post-variolous scars less perceptible and less disfiguring. In any case, such a result should not be despised, and would certainly be appreciated by the patients. Beside, the treatment is easily carried out. Simple red window curtains suffice to absorb the chemical rays of the solar spectrum.

Lastly, Professor C. Feilberg, Senior Physician at the Oresund Hospital, Copenhagen, reports^a the results obtained by him in 14 cases of small-pox treated by exclusion of the chemical rays of daylight in a sporadic outbreak in Copenhagen, in January and February of the present year. His paper is illustrated by two photographs and a series of temperature charts, which certainly show a striking modification of both rash and temperature, even in an elderly patient, vaccinated when a child, and in an unvaccinated girl of six years. Dr. Feilberg points out that Dr. Finsen based this method on the train of thought that, if the chemical rays (blue and violet) can induce inflammation in *healthy* skin, they are all the more likely to possess the power of acting injuriously on *unhealthy* skin. He is of opinion that we should especially look for such an effect in variola, from the fact that the most numerous and deepest scars are, as a rule, found on the face and hands—that is to say, on the parts most exposed to daylight. We should, therefore, exclude the chemical rays from the sick room.

That our Scandinavian colleagues, whose views I have quoted at some length, are reasoning from sound premises cannot be gainsaid. At the recent meeting of the British Medical Association, held at Bristol, Dr. Robert L. Bowles, M.D. Lond., F.R.C.P. Eng., of Folkestone, read a singularly able

^a Behandling af Kopper med Udelukkelse af Dagslysets kemiske Straaler. Hospitalstidende, Kjöbenhavn, 4 Juli, 1894.

and interesting paper on the influence of solar rays on the skin. It will be found in the *British Medical Journal*, Sept. 29, 1894, page 694. This paper bears so directly on the subject I am discussing, that I do not hesitate to lay it largely under contribution. Dr. Bowles explains that—

“A beam of light as it arrives from the sun appears elementary and white; but we know that it is a compound, and may be separated into its several elementary colours and properties by passing it through a glass prism, and thus a solar spectrum is formed. At the red end there is a dark portion representing waves of greater length than those at the violet end; the former represent the dark or long heat rays, and the latter the light and so-called actinic or photogenic rays. The former indicate what we, by our senses, know as heat; the latter those phenomena of light and of a chemical character produced by light, as well as by invisible rays extending beyond the violet, the properties of which are best displayed by the effects of photographic art, and by those truly marvellous changes in the vegetable kingdom connected with the formation of chlorophyl and the deposition of starch. This beam of light, then, is a compound not only of colours, but also of three different forms of rays—heat rays, light rays, and chemical or photogenic rays—all three of different wave lengths, and possessed of different properties, but all three in common full of ‘energy,’ excitors of electro-magnetic action, and convertible the one into the other, so that a beam of light has come to be regarded as ‘radiant energy.’

“Transparent substances transmit some of these rays and stop others; for example, rock salt transmits all forms of rays, while white glass is athermanous—that is, it does not transmit the dark heat rays (those long wave rays at the red end of the visible spectrum), whereas the light rays and chemical rays pass freely through. On the other hand, there are substances, such as iodine dissolved in bisulphide of carbon, which stop the light and transmit the heat and chemical or photogenic rays, facts of vast importance when considering the effects of sun on plant and animal life.”

Dr. Tyndall first drew Dr. Bowles’ attention to the very interesting and significant fact that he was never more burnt on the Alpine snows than he was whilst experimenting with

the electric light at the North Foreland lighthouse, where there was no heat sufficient to produce such an effect.

From many interesting facts mentioned in his paper, Dr. Bowles draws the following conclusions:—

“1. That heat *qua* heat is not the cause of sunburn.

“2. That there is strong evidence for believing that it is caused by the violet or ultra-violet rays of light reflected from the snow, which reflected light is not necessarily of the same quality as that which is incident.

“3. Captain Abney finds that the violet or ultra-violet rays are very strong at high altitudes, and believes that altitude has much to do with sunburn.

“4. That altitude alone does not explain sunburn, for one may not be sunburnt on rocks, say at 10,000 feet, and yet be immediately affected on descending to a glacier 3,000 or 4,000 feet lower down.

“5. That sunburn and snow blindness arise from similar causes, and that sunstroke may be associated with them.

“6. That rays from the electric light produce much the same results as sun rays reflected from snow.

“7. That the bronzing of the skin and the browning of the wooden chalets are probably produced by rays reflected from snow.

“The varied experiences just related would probably all be readily explained by a few simple physical laws. For example, glass is athermanous to the dark or long heat rays which arrange themselves at the red end of the spectrum; but glass, on the other hand, transmits the light rays, which are readily decomposed by objects on the farther side of it, and there degraded into long heat rays, which are now radiated as sentient heat. This is well illustrated in a greenhouse. The light rays are alone admitted through the glass, and practically all the energy in the house is degraded and then radiated as heat rays from the earth and other objects within the greenhouse which have been agents for the degradation of the ‘light energy’ into the heat form. After a similar fashion the transparent epithelial layer of the fair skin will transmit the light rays to the nerves, vessels, and other tissues immediately beneath; the light rays would there be degraded into dark or long heat rays, and excite in the very vessels themselves those primary actions which lead to inflammation and its conse-

quences. Black skins, on the other hand, and various pigments would absorb these light rays, and stop their transmission to those vital parts which may be excited to inflammatory action.

"If the sun's rays will produce sunburn, erythema, eczema solare, inflammation, and blistering, it is clearly capable of producing deep and intractable ulcerations of a low and chronic nature. It only requires a peculiar susceptibility in the individual—that unknown quantity, 'idiosyncrasy'—to allow the graver local changes to occur."

In conclusion, I am happy to be able to state that the small-pox patients treated in Cork-street hospital during the present outbreak of this disease in Dublin have had the advantage, owing to the forethought and skill of Dr. John Marshall Day, the Resident Medical Officer, of being subjected to the red-light method of treatment. Dr. Day has been good enough to furnish me with the following particulars:—

"FEVER HOSPITAL AND HOUSE OF RECOVERY,

"CORK-STREET,

"DUBLIN, *October 18, 1894.*

"DEAR DR. MOORE,—Since we used the red-coloured blinds I find we have not had any eye trouble; the patients rest well; the colour is soothing. I cannot say positively whether the pitting is less, but I am of opinion that it is. It obviates putting on bandages over the eyes and masks on the face. The first cases we had we kept most of their time in the hospital in the wards, and they certainly turned out very well, although severe confluent cases. The face was not nearly so discoloured as in cases later on that had to be sent early out of the wards to the convalescent department. Another point is that where you have the red blinds constantly down you are not troubled nearly so much with flies.

"Yours sincerely,

"J. M. DAY."

This is not the place to enter upon a history of the present outbreak of small-pox in Dublin. But I may be allowed to remark that it appears to be strictly obeying the

law of the seasonal prevalence of the disease. When the mean temperature of the air falls below 50° , small-pox has a tendency to assume a distinctly epidemic form. This year the mean temperatures of successive weeks after the middle of September were, up to the present— 56.2° , 52.0° , 50.7° , 54.1° , 45.5° , 48.3° , 52.1° , and 49.6° . The number of admissions of small-pox patients to hospital in the same weeks were respectively—13, 19, 8, 8, 28, 15, 28, and 37.

The PRESIDENT asked the author did he propose to attribute more than a subordinate part to the exclusion of light in the treatment of the disease. Some vaccination scars were well marked, though protected from light.

DR. A. N. MONTGOMERY asked Dr. Moore had his patient originally been vaccinated, and if so, what was the "number and quality" of the cicatrices? Had he been revaccinated, and if so, when? In those patients in whom the disease slurred over the pustular stage, had revaccination been performed?

DR. POTTER mentioned an outbreak which had occurred some years ago on a vessel in Cork. Some cases were treated on the main deck, and others on the lower deck, which was comparatively dark. The men on the lower deck did much better. Tincture of iodine had formerly been recommended to be applied to prevent scarring. He had applied it to a patient's face with the very best results.

DR. C. F. MOORE having also joined in the discussion,

DR. J. W. MOORE said his patient had never been revaccinated. There were two good scars on the left arm. Revaccination was very prevalent in Sweden, and it was highly probable the cases he referred to as having been treated in red light had been revaccinated. He thought that the tincture of iodine might keep out some of the actinic rays of the solar spectrum. In reply to the President, he stated that the special treatment in red light had for its object the lessening of the dermatitis, which was such a dangerous element in small-pox.

ARGYRIA.

By H. C. TWEEDY, M.D., F.R.C.P.;

Physician to Madam Steevens' Hospital.

[Read in the Section of Medicine, December 14, 1894.]

THE staining of the tissues from the prolonged use of nitrate of silver, which was some years ago observed with tolerable frequency, has of late become comparatively rare, owing to the gradual decline in the use of this drug for the treatment of nervous diseases. The case, therefore, which is now detailed seems, for that and for other reasons, to possess sufficient interest to justify its being recorded.

Sergeant L., a pensioner, aged seventy-seven years, came for the first time under my notice so long ago as 1871. He was admitted to Madam Steevens' Hospital in the October of that year, under the care of Dr. Grimshaw, whose resident pupil I then was.

He was suffering from well-marked ataxic symptoms, which had been gradually increasing for some months—pronounced girdle pains, lightning pains, characteristic gait, throwing out the feet when walking, with the toes pointed upward, and bringing the heel first to the ground each step he took. He required the assistance of a stick in walking, complained of weakness in his legs, and a sensation of numbness so that he could scarcely feel the ground with his feet. When asked to close his eyes when standing erect, he began to totter immediately, and on turning rapidly when walking he would have at once fallen had he not been supported. In short, the case was diagnosticated as one of locomotor ataxy, and he was ordered $\frac{1}{3}$ gr. of nitrate of silver, three times daily, in a pill. The pills were continued for a fortnight, discon-

tinued for a week, and then resumed, and he was kept on the same treatment during the six weeks he remained in hospital. Being obliged to leave suddenly, he took the prescription with him and continued the use of the nitrate of silver with tolerable regularity for two years. He then reappeared in the hospital (in 1873), his condition being markedly improved. The same drug was continued, at intervals, till 1876, when he was again admitted to hospital, with some return of the ataxic symptoms. He was then treated with potassium iodide for a short time, but with such unfavourable results that the nitrate of silver was again reverted to with success.

I lost sight of him for six years, when he again turned up in Steevens' Hospital in 1882 (this time to consult me for eczema of his legs). All the ataxic symptoms had now disappeared, but he stated that he had continued to suffer occasionally from pains in the back and loins, which came on acutely from time to time, accompanied by sickness of the stomach, and that on each occasion he had obtained relief from a course of the nitrate of silver pills.

I now noticed for the first time the change in his complexion, his face being of a dull slaty-blue colour, as were also his hands and to a lesser degree the rest of his body, but his general health was excellent, and in 1883 I had the honour of exhibiting him before the Academy of Medicine as an example of the beneficial effects produced by nitrate of silver on a case of what had been reasonably supposed to be locomotor ataxy.

At the close of 1894 he came once again to show himself to me, and, except for the inevitable signs of old age, there is little to add to what has been said regarding him. He has been taking the nitrate of silver occasionally now for twenty-three years, and, as far as I can calculate from his statements on the subject, I believe him to have taken more

than 2,000 gr. of the drug at a very moderate computation. Of the exact time when the discoloration of the skin first commenced I have not been able to obtain any reliable information. It was not noticeable when I saw him in 1876, and it was well-marked in 1882, but when it commenced he is unable to tell me.

Much has been written on the subject of argyria since the condition was first described by Zöllner^a at the end of the last century. I shall not weary you with historical details, but some recent investigators have brought out points of interest, which I may be permitted to lay before you.

This condition, like lead poisoning, is said to occur in those engaged in working at silver, and, like lead poisoning, it is occasionally followed by symmetrical extensor palsy. A case of dropped wrist and argyria combined, is detailed by Dr. Gowers in the *Brit. Med. Journ.* of December 1st, 1894. In this case the silver had been used continuously for more than a year to relieve gastric pain.

But it is beyond question that the continuous use of silver salts (and more especially Ag. NO₃), whether externally or internally, is liable to give rise to not only a local but a general argyria.

Duguet^b mentions a case in which this condition followed repeated cauterisations of the throat with silver nitrate; and most of us are familiar with the appearance of a gentleman occasionally seen in the streets of Dublin in whom the condition is said to have arisen from a similar cause.

Hutchinson^c details two cases of general argyria, in which the history showed that the drug had *only* been applied externally—in the one case locally to syphilitic sores, and in the other case to the mouth and throat. The latter case

^a Reise durch Pommern, nach der Insel, Rügen. Berlin, 1797, p. 169.

^b Gazette Méd. de Paris, 1874, No. 28, p. 351.

^c Ann. Surg., Philadelphia, April, 1892.

was a very remarkable one, inasmuch as the staining only appeared after the lapse of eight years.

Crocker ^a alludes to a similar case, in which the blueness did not develop for many years after the topical applications had ceased to be made; and Lombard ^b mentioned a case in which after a six years' pause in the administration of the drug, a staining of the skin followed its resumption for six months. Numerous other cases might be quoted where the condition followed the application of the drug to the surface of wounds and to its internal use for nervous and gastric affections.

All these cases serve to emphasise the fact that silver salts, if introduced into the body, are eliminated from it but to a very slight extent, if at all. The quantity of silver requisite to produce argyria must be subject to considerable variation. Krahmer ^c says that the smallest quantity that has produced it is 450 grains, but in Riemer's ^d case 1,740 grains had been taken during a whole year, before any staining of the skin appeared.

An acute form of the disease has been recently described by Olshausen, ^e who gives an account of a case in which a large open wound had been treated with a 1 per cent. solution of nitrate of silver, when the mucous membrane of the cheeks, gums, and the under surface of the tongue became stained of a blue-black colour, and eight days later the patient died of exhaustion from diarrhœa.

To Frascchetti ^f and to Robert of Dorpat ^g we are indebted for the most recent information regarding the experimental investigations in relation to argyria.

^a Diseases of the Skin. 2nd edition, 1893, p. 406.

^b Rus. Magazin, N. F. Berlin, 1833, XVI., p. 145.

^c Das Silber als Arzneimittel, Halle, 1845, p. 153.

^d Archiv. der Heilkunde. Leipzig, 1875, XVI., p. 296-385.

^e Deut. Med. Woch, 1893, No. 47.

^f Deutsche, Med. Zeit. August 22, 1892.

^g Archiv. f. Dermatologie and Syph., 1893, Heft V.

The former draws the following conclusions :—

1. All silver preparations give rise to argyria, even to a local deposit, upon their external employment.

2. Reduction of the silver salts administered takes place in the stomach and afterwards in the intestinal canal, tending to the separation of the metal.

3. Silver finds its way into the organs through the lymphatics.

4. It is not eliminated by the urinary organs or by the intestines.

5. It does not, as a rule, produce any material effect upon the health.

Robert practically endorses Frascchetti's conclusions, but he further states that the silver, if injected directly into the blood, becomes incorporated with the white corpuscles, forming also with the serum of the blood a complex albumen product, and that it then undergoes reduction to metallic silver or oxide of silver, appearing in the form of black or brown spots, staining the borders of the gums, the last phalanx of the fingers. Later on the deposit appears in the skin of the face and of the body, being most apparent in the portions most exposed. Similar deposits are found in the liver, kidneys, spleen, and small intestine. No deposit, according to this author, takes place in the epithelium cells of any organ, in the muscles, in the nerves, or in the laminae of the bones, but the staining will be found chiefly in the connective tissue, especially in the choroid plexus, in the tunica propria of the sebaceous glands, the sweat glands, and the mucous glands, &c.

To my friend, Dr. Earl, I am indebted for some sections made by him of the portion of skin taken from the lower eyelid. There can be seen the black and brown granules deposited in the connective tissue, and more especially round the sheaths of the hair follicles, but no deposit in the epithelium cells.

In conclusion, I think, the case before us furnishes us with certain lessons:—

1. That no precautions can guard against the staining that follows the prolonged use of nitrate of silver. In the present instance the possible occurrence of argyria was foreseen from the first, and with a view to guarding against it, the use of the drug was regularly discontinued for a week, after having been used for a fortnight, but without avail, as may be seen.

2. That the health of the patient has not suffered in the least from the use of the drug during the long series of years since 1871.

I may here remark that all attempts to effect decolorisation in this affection have proved practically useless. Some years ago Gaudell^a advocated large doses of potassium iodide combined with mercurial vapour baths for this object, and stated that in the case of two syphilitic patients with whom the treatment was persistently carried out for several months, decolorisation was eventually effected. The utility of this method seems to be exceedingly doubtful, and, as far as I am aware, no other cases have been recorded in which the treatment has proved successful.

But to my mind the most important lesson connected with our case has been the marked beneficial effect, explain it as we may, produced by silver nitrate upon a patient who presented most, if not all, the prominent symptoms of locomotor ataxy. This is not merely coincidental. The case has now been under observation at intervals for more than 23 years. The symptoms that have been detailed gradually disappeared while he was using nitrate of silver. He ceased the use of the drug, and after a time some return of the symptoms took place, vanishing a second time, however, as he resumed his former prescription. Once again the trouble

^a Amer. Pract., September, 1872.

reappeared, and fearing he was taking too much nitrate of silver, the treatment was changed to potassium iodide, but only with injurious effect. The old remedy was once more resumed, and again with happy results. It is now more than ten years since he showed any definite symptoms of ataxia. He has none whatever at the present time, and I think it may be fairly conceded that the discoloration of his skin has not been an extravagant price to pay for the benefits he has derived from the use of a drug, which, if it were formerly used incautiously, and with too little discrimination, has of late years been relegated to a retirement, from which it might occasionally be recalled with advantage to the patient as well as credit to the physician.

SMALL-POX: ITS DIAGNOSIS AND PROGNOSIS.

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[Read in the Section of Medicine, January 11, 1895.]

IN the discussion of the subject of this paper I can hardly pretend to have much that is new to say. I can only hope that the statement of my own experience may have some merits due to its personal character, as we sometimes hear with pleasure, and remember with comparative ease, incidents of ordinary life or foreign travel when told by him to whom they happened, which would slip out of our memories if read in a book or newspaper.

I must say, at the start, that for practical purposes I draw no distinction between true unmodified variola and the disease as it occurs in persons who have been vaccinated. Either permits of recovery or death; both may present difficulties of diagnosis. My object, again, is not to give a differential diagnosis of small-pox at all its stages, but to supply some help in deciding at one visit whether we have to deal with a case of that disease or not. To delay too long in recognising a case as one of small-pox, or to send a non-variola case into a small-pox ward, is equally a serious mistake.

Small-pox must be recognised from the history (opportunity of infection, mode and dates of onset), the symptoms, and the eruption. I may be pardoned for recalling the typical points in regard to these matters. On a certain day—the first day, or day of onset—the patient feels ill, has headache or backache, or general pains in the bones, and

some rigors. Next day he is still sicker, vomits, or at least feels nausea. On the third day the eruption makes its appearance, or it may be delayed till the fourth. The temperature has risen on the first day possibly to 102° or 103° ; on the second day possibly to 104° . It is usually stated that the temperature falls somewhat critically on the appearance of the rash. That is not exactly our experience, but rather that it takes a couple of days to fall; those days—namely, the third and fourth, or fourth and fifth—on which the rash is extending over the body. For the rash, papular in character, comes out first on the face, then on the wrists, then it appears on the legs, the trunk, and, last of all, on the palms and soles. By the time papules have appeared in these last the eruption on the face has become vesicular. During the fifth and sixth days the majority of the papules become vesicular, and in a considerable proportion of cases the vesicles become umbilicated, the temperature at the same time being almost normal, or at least subpyrexial, and the patient feeling almost quite well. From the seventh to about the twelfth day the vesicles become pustules, and these gradually burst or dry up into scabs, the temperature during those days forming a somewhat rounded curve, usually known as the secondary or suppurative fever. The patient is again ill, this time with asthenic symptoms, which gradually improve from the eleventh or twelfth day, till about the eighteenth or twentieth day he is quite well again.

I have described a typical case with favourable ending. I have to add that some cases have no secondary fever, and are practically out of all danger by the seventh or eighth day; while others die at all periods of the disease, from the third day to the third or fourth week, and as a result, for the most part, either of the initial virulence of the infection, or of the amount of the later suppurative process.

It is easy to see that a disease which has so many phases

must present a great many resemblances to other morbid conditions, and that it is no wonder that mistakes in diagnosis should occasionally occur. The onset of variola is exceedingly like that of influenza, by reason of the rise in temperature, and the headache, backache, and general pains in the bones. Similarly it may resemble acute rheumatism, typhus and cerebro-spinal fever. The headache may suggest enteric fever, but the onset is too sudden. Practically, it may be stated, small-pox is seldom diagnosticated with confidence till some eruption has occurred, but it is not always a simple matter even then. Certain initial or preliminary eruptions occur in about 10 to 15 per cent. of small-pox cases. These may be local or general, petechial or erythematous. The local ones affect mostly the groin region, or the groins and axillæ, and have usually a purpuric character; the general ones simulate scarlatina or measles. Assuming the presence of an epidemic, and the onset symptoms in a particular case suggesting the possibility of small-pox, the presence of one of these rashes might practically complete the diagnosis. But diagnosis would be difficult in a case such as occurred in the Hardwicke Hospital, where a man, covered with a scarlatinal rash, stated that his child had died of scarlatina a few days before, were it not that the variolous papules were appearing through the general erythema. I think it may be said that the diagnosis of small-pox cannot be absolute till the specific papule has appeared. One exception, perhaps, may be made to this statement—namely, that in some cases of hæmorrhagic small-pox, marked by violent onset symptoms, and characterised usually by persistent backache, and in which, therefore, the diagnosis is pretty clear, death may occur before any papular rash manifests itself.

The diagnosis of the eruptive stage of small-pox is not always as easy as one would suppose. A hæmorrhagic case may be mistaken for one of severe purpura or scurvy, or *vice*

versâ. Sometimes a common sweat-rash is mistaken for that of variola, or a very discrete, small pustular rash, confined to the face, may be mistaken for *acne sebacea*. Cases of variola, with what is called a corymbose eruption—that is, in which there occur, perhaps, two or three patches of thickly-clustered and rapidly-cohering vesicles—may simulate herpes zoster if the corymbose patches are much in advance of the remaining eruption. Strange to say, Fagge states that he never saw this form of eruption. It happened that I saw the very first case of the present epidemic in Dublin under the following circumstances:—On my lecture morning at the Whitworth Hospital, I was brought by my resident pupil to look at a case of supposed skin affection which had been admitted the night before. The man made little or no complaint, except of a cough which proved to be associated with tubercular disease in the apex of the left lung. He presented, on the inner surface of each thigh, a herpetic-looking patch about four inches by three in size, but on closer examination a few fine papules could be found here and there over the trunk and limbs. I had him at once removed to the Hardwicke observation wards as a probable case of small-pox, and when I saw him again a few hours later all doubt was removed from my mind by finding the general eruption much further developed.

Scabies may easily give rise to some diagnostic difficulty; so may impetigo; and so may syphilis, with either papular or pustular eruption, especially if of rapid development. During a small epidemic, treated in the Hardwicke in 1887–88, a woman was sent in as a case of small-pox in the pustular stage. She looked very like it, but she was by no means so sick as such a plentiful rash would have warranted, and further, a valuable diagnostic point, the eruption was in some places papulo-roseolar. She was recognised as a case of syphilis, and before she left the medical ward to

which she was transferred, she had developed a syphilitic lupus which eroded the alæ of her nose. But a serious difficulty may arise if a mild variola occur in a patient with secondary syphilitic eruption. This happened to one of our recent cases—a man who was sent into hospital only when the variolous eruption had, as it were, raced past the syphilitic one, coming out on the palms and soles, and developing the typical vesicles not merely on the skin but on the palate and throat.

Varicella or chicken-pox may resemble variola very closely, and during an epidemic of small-pox the diagnosis between the two diseases at one visit may be decidedly difficult. Characteristic cases of the two diseases are, no doubt, easily differentiated; but where either approaches the type of the other the difficulty is increased. To this audience I need not rehearse the many points of difference between these two diseases; the incubation, the onset, the eruption, the course, the sequelæ, usually help us to separate the diseases at once. But cases occur in which we have no such help, and taking these exceptional cases as my justification I venture to state, in the first place, that cases of small-pox may have little or no illness leading up to the eruption or afterwards; that the eruption may be very scanty; that it may not be noticed till it has already become vesicular; that the vesicles may, for the most part, dry up or burst before they undergo any umbilication; that there may be no fever, at least during the time the patient is under medical observation; and there may be no pitting of the skin afterwards. In the second place, that cases of varicella sometimes occur with somewhat severe onset symptoms—even with convulsions, as recorded by Fagge—with a general papulo-vesicular eruption, involving even the palate and fauces, in which presently some umbilication becomes perceptible, with, around the vesicles, a suspicious areola, which, when the vesicle

becomes purulent, sets up a close resemblance to the small-pox pustule; the fever runs, perhaps, to 102° or more, and afterwards some pitting is left and the patient may suffer from more or less debility. On the one hand, then, cases of small-pox may possibly be passed as chicken-pox; on the other, cases of varicella are likely—especially during an epidemic of small-pox—to be sent into hospital as having variola. I need not say what evil consequences may flow from either mistake.

Now I cannot presume to lay down any rules by which such errors may be absolutely prevented. It is true that if we could afford to watch the case for two or three days we could hardly fall into the error at all, but where small-pox is epidemic delay is surely dangerous. Picturing to myself a difficult case, I shall attempt to indicate the points on which to rely for a satisfactory judgment at a single visit.

If there be a history of two days' illness before eruption, it makes for small-pox, also if the eruption is better marked on the forehead and face than on the trunk, the reverse usually being the case in chicken-pox. If papules have distinctly been noticed in advance of vesicles, and if at any given region, such as the face or the trunk, the rash is pretty uniform, that is, either papular or vesicular and not mixed; if the development of the rash has been from the face downwards, the legs coming last; and finally, and as I believe an essential point, if the papules can be seen or felt on the palms of the hands and soles of the feet. On this I should lay great stress; I do not think I have seen a single case of small-pox without at least a spot or two among those four surfaces, and I do not remember ever to have seen a varicella vesicle on them. If it does occur, it must be very rarely indeed. Further, it is well to remember that, in persons bearing good infancy vaccination marks, small-pox is rare before ten years of age. Lastly, should doubt still

remain we should vaccinate, and take care to vaccinate effectively, both for the sake of the diagnosis and for prophylaxis.

The prognosis in small-pox has to deal with death or recovery; and if recovery is probable, as to possible permanent ill consequences. My experience of evil sequelæ from small-pox is practically none, unless we include pitting among them. With regard to pitting, I am quite of Osler's opinion that its prevention "is really not in the hands of the physician. It depends entirely upon the depth to which the individual pustules reach." If the pustule destroys a portion of the cutis vera there must be a pit or a scar; therefore, whenever and wherever the eruption is scanty and superficial, and the epidermis thin, there is less likelihood of pitting than under the converse circumstances.

As regards life, I think it may be said that prognosis in small-pox should be very guarded till convalescence is well established. The mildest cases cannot be said to be quite free from danger till the eighth or tenth day, but there are certain cases in which death may be said to be as probable as survival; some in which death is almost certain. The gravity of a case is of course greatly enhanced by the fact that the patient has not been vaccinated, and in infants and children the danger is vastly magnified. On the other hand, well-vaccinated children, if they take the disease, probably get over it easily.

The earlier the eruption appears after the onset the greater is the danger of its becoming confluent and severe. We have had some striking examples of this statement, though on the other hand some of our cases had distinctly early, and at the same time scanty, eruptions. The question of confluence has more bearing upon prognosis. The term *confluent* is, it seems to me, too frequently referred to the pustular stage; but in the pustular stage there are several

more valuable criteria of prognosis than the mere configuration of the eruption, and besides, more or less confluence is very common indeed in the pustular stage. In so far as confluence of the eruption is of value as an indication of future severity, it may be guessed at and measured in the vesicular period—that is, about the fifth or sixth day. The more confluent the rash is or promises to be upon the face, the greater the probability of a severe secondary fever and the greater the risk of an unfavourable ending. But confluence, *per se*, has no mysterious significance; it is a measure of the thickness with which the eruption is developed, and to some extent of the depth of true skin involved. The more plentiful and the deeper the eruption the more danger. To a particular form of confluent rash the term corymbose has been applied; I have defined it when discussing diagnosis as resembling a very close-set herpetic patch. Marson, as quoted by Fagge, found the mortality of patients affected with this form to be 41 per cent. We have had several examples of corymbose rash, and we have not learned to associate them with any special danger, unless when occurring on the face.

The gravity of hæmorrhagic small-pox needs no telling here. But it may be well to define as far as possible the elements which constitute a hæmorrhagic attack. In the first place let us put the absolutely hopeless cases, in which there is bleeding from the urinary tract, or from the alimentary canal. Some of these cases may have at first only bloody sordes on the lips or teeth; but by-and-bye there is distinct bleeding from the gums or the nose, or from the bladder, vagina, or anus. In such cases the rash may hardly have appeared; when it does, it is papulo-purpuric. It seldom has time to become vesicular; death always occurs before pustulation. A still severer hæmorrhagic case may simply look bluish or extremely cyanotic over the whole

surface, with here and there still deeper purpuric patches, and may die without any sign of internal hæmorrhages before any but the most rudimentary papules can be discerned.

But there are cases less striking than these in which the prognosis is only a shade better. They are those in which the eruption has time to appear, but appears in a hæmorrhagic form. Either the papules are at their eruption surrounded by a petechial areola, or when they become vesicular the vesicle fills with blood, not serum. A few sanguineous vesicles on the legs are not of evil import, but the higher the vesicular hæmorrhages reach the greater the danger, and if the face and arms have petechial papules or sanguineous vesicles the outlook is, as a rule, most gloomy.

Next to the hæmorrhagic eruption we may take the plentiful but slow and ill-developing rash as an omen of danger. The papular rash, which is plentiful, and has deeply stained areolæ, and becomes vesicular very slowly, and in which the vesicles do not come to the normal size or prominence, but remain small and flat, is decidedly a dangerous eruption.

Having said so much for the special characters of the variolous attack as they are of value for prognosis, I may now note some other circumstances which predispose to an unfavourable ending. In a highly septic infection such as this considerable strain must be thrown upon the kidneys. As might be expected, a large number of our cases have had symptomatic albuminuria; but cases of antecedent renal disease have a poor chance of recovery. Two of our cases died in uræmic convulsions at the same time that the rash was of the very scantiest, and almost at its outset.

Previous intemperance is also a potent factor for ill in small-pox, a fact of which we have had examples. Lastly, pregnancy is said to produce abortion, which in most cases ends fatally. We have had no case of abortion, but we have

had some cases in which a normal parturition appears to have been determined by the onset of variola. In each case the mother has survived, and the infant, notwithstanding vaccination immediately on recognition of the mother's disease, has contracted the disease and died.

Lastly, let me add, that a preliminary eruption adds no gravity to the prognosis, not even if purpuric, provided it is confined to the groin region. Of course a general purpuric eruption would be an almost fatal sign.

I laid stress a little while ago on the uncertainty which hangs over the average case of small-pox till convalescence is well established. Let me illustrate this briefly. Several of our cases have died quite unexpectedly after a few hours of dyspnœa, with a diffuse broncho-pneumonia; one, not an albuminuric, and with a slight rash, died of convulsions; and another almost convalescent died of acute œdema of the glottis.

In conclusion, I desire to say that I have not introduced statistics into this paper, because the number of our cases is still too small to give statistical results of any value. My object has been to say something which might be helpful to others during the presence of the epidemic in the recognition of the disease and its dangers to life.

ARSENICAL MULTIPLE NEURITIS FOLLOWING THE APPLICATION OF A CANCER CURE.

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[Read in the Section of Medicine, December 14, 1894.]

FOR centuries past it has been recognised that disorders of locomotion or sensation have been frequently associated with disease of either the brain or spinal cord. That affections of peripheral portions of the nervous system could give rise to similar kinds of disturbance does not seem to have suggested itself to the minds of any of the earlier neurologists. To Robert James Graves, whose name is so intimately associated with the history of medicine in Ireland, belongs, apparently, the honour of having first suggested, some fifty years ago, that "paralysis, in the absence of any lesion in the brain or spinal cord, may arise from disease commencing and originating in the nervous extremities alone."^a This hypothesis does not appear to have borne any immediate fruit, for not till the year 1864 was it placed by Duméril, who verified the presence of multiple neuritis at an autopsy, on the sure foundation of pathological investigation. Still, notwithstanding these observations, cases which are now readily recognised as examples of multiple neuritis continued to be reported as illustrations of obscure affections of the spinal cord. However, about 1880, that remarkable distribution of physical signs and symptoms which we now know indicates peripheral rather than central lesions became more generally recognised, and from that time onward our knowledge of multiple neuritis has been steadily increasing. The first

^a Quoted by Ross and Bury. *A Treatise on Peripheral Neuritis*, p. 2. London, 1893.

cases in these countries in which the diagnosis was confirmed by a *post mortem* examination, were reported by Sir Grainger Stewart in 1881. Since then the evidence has become overwhelming, and whatever shadow of a doubt, as to the possibility of primary lesions of the nerves producing paralysis, may have existed some twenty years ago, has now completely disappeared before the clear cold light of pathological observation and experimental investigation.

Although the ætiology of multiple neuritis is often obscure, there are certain factors which are universally admitted as potent in its production. Foremost among these is chronic alcoholism; then come the acute specific diseases, especially diphtheria, and in the next group of causes are some of the heavy metals and metalloids—*e.g.*, lead, silver, arsenic, mercury, &c. Of these, lead is by far the most frequent, and arsenic, though separated by a long interval, probably comes second. Peripheral neuritis, the result of silver or mercurial poisoning, is exceedingly rare.

In the case of multiple neuritis now under consideration, there can, it would seem, be no doubt that arsenic has been the exciting cause, and as such cases—more especially since the Act of 1851, restricting the sale of arsenic, was passed—have been very exceptional, the clinical notes may not be without interest. The literature of this subject, scattered through medical journals and treatises on toxicology, presents a few cases in which paralytic phenomena have followed on the prolonged administration of Fowler's solution, or have arisen from the absorption of arsenic in those whose occupation has brought them in contact with it. To this latter class belong naturalists who use large quantities of arsenic in the preservation of skins of animals, and manufacturers and retailers of goods, such as Indian

muslins, green papers, &c., in which arsenic is often employed freely as a pigment. Lastly, nervous sequelæ in a few rare instances have manifested themselves when arsenic has been taken through mistake, or with a suicidal motive, or been administered with a homicidal intent. But in none of the recorded cases has the arsenic gained entrance to the nervous system in exactly the same way as that disclosed by the following clinical notes:—

CASE.—A. B., aged twenty-eight, by occupation a laundress, was admitted to the City of Dublin Hospital on August 7th, 1894, complaining of vomiting, diarrhœa, and great weakness. She was able, assisting herself by the bannisters, to walk up the stairs to the female ward. When seen on the following morning her temperature was 97° F., her pulse 104, and respirations 25 per minute. She was very well nourished, of rather a ruddy type of countenance, and did not look very ill. There was nothing definite to be detected on physical examination, except a somewhat circularly-shaped black slough, not quite so large as the palm of the hand, firmly adherent to the right breast above the nipple. It was surrounded by a ring of inflamed tissue, and on palpation an ill-defined hard mass could be felt in the breast. An attempt was made to remove the slough, but nothing separated except a few small flakes like brown paper soaked with water. Asked to explain the origin of this slough, she replied that a plaster had been put on her breast some days previously, and that she blamed it for the state in which her breast was. I understood from her that she had applied the plaster to her breast on account of a blow she had received on the gland. The urine was acid, sp. gr. 1015. It contained a faint trace of albumen, no sugar, but it was thought that the chlorides were somewhat diminished. The diarrhœa and vomiting ceased on her admission to hospital, and during the week I had her under observation she complained chiefly of feeling weak, of pain in her mouth and throat, of some itchiness and tenderness about the eyes, and of spots on her face. Nothing very striking was noticed on examination, but she was ordered a mouth wash and a powder for her face. I examined her breast again and felt that I had not yet got to the bottom of the case. I was satisfied that the sharply defined slough was not the result of an injury, but that some powerful irritant had been applied; arsenic at once suggested

itself; and as I had discovered no cause for the vomiting and diarrhoea an idea flashed across my mind that possibly they were the result of the same cause. On consideration, however, it seemed highly improbable that symptoms, presumably the result of the local irritation of the arsenic, could be produced by its absorption from a broken surface remote from the alimentary canal; consequently the idea took no definite shape. The breast was poulticed and dressed, but there was no indication of the slough separating when I went on vacation, a week after her admission. In my absence she came under Dr. Graves' care. The applications were continued as before, and after some time the slough had so far separated that the major portion of it was removed. Some ten days after her admission she complained of violent shooting pains in her arms and legs. The pain was at times of a burning character, and patient sometimes felt as if her whole body was on fire. She experienced always more pain in her right side than in her left. She became very restless, shouting out suddenly, and causing so much disturbance in the ward, especially at night, that the then Resident Pupil, Mr. Griffin, was frequently called up by the nurse. He sometimes relieved her temporarily by holding her arms and suggesting to her that the pain was better, but was often obliged to give her an opiate to quiet her.

Mr. Griffin says that at this time he did not think there was any connection between the pains and her breast, and he considered the pains were probably of an hysterical nature—a supposition which seemed to be confirmed by the irritable, excitable, and at times almost violent temperament of the patient. Gradually motor phenomena commenced to manifest themselves in her extremities.

On admission she walked up the stairs, and was able for two or three weeks after that to feed herself. Then on attempting to convey food to her mouth she often spilled the tea about her bed, broke a plate and a mug, and finally lost the power, not only of feeding herself, but of doing anything whatever with her hands. Similarly, power in the lower extremities disappeared, especially from the knees down.

On my return from the country, about the middle of September, 1894, I found that the slough had completely separated, leaving a granulating surface of a fairly healthy character, and, though the swelling was apparently unaltered, some enlarged glands were to be felt in the right axilla. She had now almost complete loss of power

in her forearms, the wrists dropped, and grasping power was practically nil. She was unable to stand, and though she sometimes got out of bed for a moment or two, she kept herself from falling by throwing her body across a small table at the bedside. She still suffered considerably from violent pains in the extremities, and complained of abnormal sensations—*paræsthesiæ*—numbness, tingling, pins and needles, &c. She was hyperæsthetic in the forearms, hands, and legs, but I could find no areas of *anæsthesia*. There was complete abolition of the plantar and knee reflexes, and profuse sweating of the hands and feet. It was, therefore, clear that she was suffering from something more than hysteria, and a peripheral neuritis seemed the most probable diagnosis.

On careful inquiry we were able to obtain a much more detailed history than that she gave us at first. About last Christmas (1893), she noticed a swelling in her right breast, which she attributed to a blow she received from the handle of a mangle some months previously. Last July (1894) she found that the swelling was increasing in size; and an old woman, one of her companions in the laundry, noticing that something was troubling her, inquired as to its cause. In response to this request the swelling was demonstrated, and without hesitation pronounced to be a cancer. For her further edification she was informed by this wise companion that if she showed it to a doctor he would cut her breast out; that the lump would grow again in two or three years, and finally kill her—a prognosis which is unfortunately only too often justified by events where the diagnosis of mammary cancer is correct. To combat the mental depression thus produced, she was informed that a cure which had been used with great success on a lady's breast, and which would take the swelling out by the roots, was available, and this her companion was willing to obtain for her. Such a brilliant and successful line of treatment offered a marked contrast to the humiliating one of orthodox medicine, and my patient gladly consented to submit to it.

The cure was applied on Wednesday morning, August 1st, 1894, in the form of a plaster. It remained on till Thursday, when it dropped off, without apparently having produced any visible effect. But the wise woman was quite equal to the emergency. "We must break the skin!" was the solution of the difficulty, and on Thursday night a fly blister was applied. By Friday morning numerous vesicles had formed, some of them had burst, others were opened with a scissors, and between 8 30 a.m. and 9 a.m.,

Friday, the cancer cure was re-applied. Almost immediately, to use the patient's own expression, the pain became "raging," and within an hour she felt exceedingly ill. She became giddy, and surrounding objects became double or treble, and there was a noise like bells in her ears. Still she did not desist from her work till dinner hour, 2 p.m. With difficulty she staggered home, reeling like one who was drunk, and, too ill to undress, flung herself across her bed and almost immediately commenced to vomit. The emesis was uncontrollable; as she expressed it, her head remained for the next forty-eight hours almost continually hanging over the basin, and she wondered where all the fluid could be coming from. Diarrhœa—six motions in twenty-four hours—set in, and continued till her admission to hospital.

With regard to her previous history, she states that she was always a very temperate woman, and, as far as she can remember, in excellent health. Her father died from a stroke some thirteen years ago, and her mother from bronchitis. Two of her brothers died in childhood; one brother and two sisters are alive and in good health.

Such a history left little doubt on my mind that she was suffering from arsenical neuritis, following the application of a cancer cure, but so far I had no positive proof that such was the case. On mentioning some of the details to Dr. Purser, he suggested the advisableness of examining the urine for arsenic. About twenty-five ounces were collected and examined, after Reinsch's method, but with negative results. At this result I was not much surprised, as I used only a comparatively small quantity of urine, and eight weeks had elapsed since the application of the plaster.

It was explained to the patient how very necessary it was to be absolutely sure what irritant had been used, but she knew nothing of the woman who had procured the cure, and could not hold out much hope of being able to obtain any of it. She promised, however, to speak to her brother, and one morning in October a small package

was handed to me, containing a dark coarse powder with yellow sulphur-like particles scattered through it, stated to be of the same nature as that which had been applied to the breast. The examination for arsenic was not completed when, on Monday, October 22nd, about 11 a.m., a note was handed to me, which read as follows:—“Dr. Parsons—A gentleman is just round the side of Baggotrath Church, on Waterloo-road” (then follows a description of his appearance), “who would be glad of a private interview for a few moments.” Mentally I ran over any sins of omission or commission in connection with my hospital work of which I had been recently guilty, and having a tolerably clear conscience, I decided to yield to his request. The gentleman was there, and so nervous and excited that I thought, at first, he must be a lunatic, but my fears were groundless. Having obtained a conditional promise of secrecy, he proceeded to inform me that it was he who had supplied the powder, and that for the last month he had not had a single night’s rest since he had learned what disastrous results had followed its application.

The powder used on the woman’s breast consisted of crow-foot, saffron and sulphur, with about thirty grains of arsenic. I asked if the powder I had received corresponded with that used, and he replied—“Yes, except that it did not contain so much arsenic as the cure.” He then gave me some of the latter, which very closely resembled the powder described above. I pointed out the great injury he had done this woman, the risk he was running, and he promised faithfully never to use such applications again.

The analysis of the first powder was completed, and the sublimate obtained consisted of numerous octahedral crystals of oxide of arsenic (As_2O_3).

There was now no question about arsenic having been

the active agent, and on October 23rd I put my patient on 10 grain doses of iodide of potassium three times a day, hoping to facilitate the excretion of any arsenic which might be still present in her system. For the twelve days following all the urine passed was collected, in all about twenty pints. This was boiled down daily in the chemical laboratory, till concentrated to about thirty ounces, and then I proceeded to look for arsenic as formerly, except that I used every possible device I knew of to ensure the attachment of any arsenic which might be present to the copper. Only a very small amount of sublimate was obtained, and it was not oxide of arsenic. An examination of the powder obtained from the "cancer doctor" demonstrated the presence of arsenic in very large amount.

As this completes the toxicological aspect of the case, I would wish here to express my sincere and grateful thanks to Professor Reynolds for the very kind way in which he allowed me to use his laboratory and its resources, and for the advice, guidance, and supervision which he so freely gave me. To his assistants, Messrs. Werner and Early, my best thanks are also due.

To return to the clinical aspect of the case—it will be remembered that about the middle of September, 1894, there was almost complete paralysis of the forearms and hands, with some weakness of the upper arms; distinct loss of power in the lower extremities below the knees; violent pain, hyperæsthesia, and abnormal sensations in both upper and lower limbs; absence of the superficial plantar and deep knee reflexes; profuse sweating of hands and feet; and some slight atrophy of the intrinsic muscles of the hands.

Towards the end of September, with the assistance of a nurse, she got out at the side of the bed, but was unable to stand except by supporting herself by leaning the backs of her wrists against a table. She complained of the pain the attempt to stand gave her. If supported she could make some attempt at walking, but even at

this stage it seemed as if she wanted guidance rather than actual support. Slight improvement in the muscular power of the arms and wrists was noticed. She was able to raise the latter slightly, and the grasping power of her left hand was a little stronger. Several attempts were made to examine the electrical reactions of the muscles, but, owing to the very severe pain excited, little information could be obtained except that their irritability to the Faradic current was greatly reduced, the flexors being, if anything, more easily excited than the extensors.

As power was returning, inco-ordination in the upper and lower extremities became more and more distinct. She could not rapidly touch the tip of her nose with the extended finger when her eyes were shut, or button her dressing gown, as her fingers fumbled about in a very irregular fashion. She could not walk except guided, nor stand with her feet close together, and her eyes shut, or even with her eyes open, except her feet were far apart. She complained that the skin of her feet felt thick, and to this attributed her difficulty in standing and walking. She was unable to unbutton her dressing gown, to hold her mug firmly in her hand, or to make any attempt at feeding herself. About the middle of October the pains were less acute, and she was sleeping better at night. Towards the end of the same month she walked some yards unsupported, in her bare feet, but had great difficulty in maintaining her equilibrium, especially on turning, and though able to stand on a broad basis, reeled on attempting to close her eyes. She complained of severe pain in her legs on attempting to walk. The drop-wrist has disappeared, but she has only very slight power in her hands, and raises up the bedclothes with the back of her wrists. She is still unable to unbutton her dress, and has great difficulty in finding where the button is. To do so, she runs her extended fingers down the side of her gown till she feels her fingers caught by the button, but even then she cannot grasp it. She is now again attempting to feed herself from her mug by putting her thumb through the handle and allowing the lower part of the cup to rest against the ulnar side of the hand.

On November 2nd, *i.e.*, three months after the application of the cancer cure, she states that she is nearly free from pain and that her "natural feeling" is coming back to her hand. Extension movements at wrists and in fingers are now tolerably good, but flexion is only partial and very feeble. The hands still perspire profusely. Most of the muscles in the upper extremities were

found to react to the continuous current, but the details of the examination have been mislaid.

November 11th—The ulcer on the right breast has healed up completely. There is still a hard mass to be felt in the breast, the retraction of the nipple has become most marked, and the enlarged glands in the axilla are still present. She feels much better and is able to walk across the ward without any assistance, but there is distinct inco-ordination of movement. She continued to improve from this date till the end of the month, the record for which is:—There is still considerable weakness in the upper extremities, more especially in the flexors; bending the fingers completely is not yet possible. Only very slight loss of sensation can be detected on examination, though she complains of numbness in her finger tips. There is distinct inco-ordination evidenced by the difficulty she has in performing the finer movements. The thenar eminences and the first dorsal interossei present marked atrophy, and the fingers are of an unhealthy sodden appearance. Power in the forearms is fairly good, and there is no pronounced nutritive disturbance. In the upper arms there seems to be no indication of any morbid process. There is some weakness in the lower extremities, but no marked loss of sensation, and the hyperæsthesia has disappeared. The knee-jerks are absent. Inco-ordination of movement is still visible, though not so distinct as formerly. During the last few months her hair has fallen out in considerable quantities, and from being of a dark brown colour has become grey, especially over the front of her head. It was thought that possibly a dye might have been in use before her admission to hospital, but not the slightest proof in support of this supposition could be obtained.

As optic neuritis has been recorded in two cases of arsenical intoxication, I asked Mr. Arthur Benson, Ophthalmologist to the Hospital, to kindly examine her eyes, and he reports that at the time of his examination there was none, nor any trace of a previously existing inflammation. We have never found any pigmentation or desquamation of the skin; neither have there been any herpetic eruptions. She has never had any vesical or rectal trouble, and there has been no disturbance of the menstrual function. Her temperature since her admission has been practically normal; the highest elevation recorded was 99.6° , taken on the fourth day after her admission. The pulse has varied from 72 to 120, and the respirations from 16 to 20 per minute.

January, 1895—Patient has been slowly but steadily improving;

her hair is thicker and not so grey. She has still much difficulty in picking up a pin from a flat surface, owing to some slight loss of sensation in her finger tips. There is also a trace of inco-ordination in her lower extremities, particularly when she tries to walk along a narrow plank. Her nails present transverse ridges, especially well-marked on right hand, and the skin is glossy and thin around the nails. Her hands still perspire considerably and also her feet, but the latter less than formerly. As the mass in her breast did not show any distinct indication of subsiding, and the axillary glands still remained enlarged, notwithstanding the healing of the ulcer produced by the cancer paste, I asked Mr. Wheeler to see the patient again with me, and we agreed that it would be desirable to have breast and glands removed. Her general condition now seemed sufficiently good to allow her to submit to an operation, but she was very strongly opposed to anything which would involve the removal of her breast, and could not be persuaded to consent to it for some weeks.

March 6th—There has been no material change in her condition since last note. She has, however, less inco-ordination, and can once again use a safety pin in dressing herself, and, though with difficulty, write her name. The knee-jerk is still absent; and the ridges have almost disappeared from her nails.

March 7th—The breast and numerous enlarged glands were successfully removed by Mr. Wheeler. Microscopical examination confirmed the clinical diagnosis of malignant disease, as the tumour proved to be an irregular-celled carcinoma. The wound healed up rapidly. In May the patient, who had so far recovered that she was able to feed and dress herself, and walk without difficulty, was sent to a convalescent home.

The following points are, I think, worthy of particular attention:—

(A.) "The cure," notwithstanding the large quantity of arsenic which it contained, had no action on the unbroken skin, though it lay in contact with it for over twenty-four hours. Christison^a states that arsenic applied to the sound skin of animals does not easily affect it, and mentions the experiments of Jaeger, in which no effect was produced if

^a Christison "On Poisons," p. 237. Edinburgh. 1829.

the poison was simply placed in contact with the skin. "Nay, even," he proceeds, "when rubbed in with fatty matters it does not operate with energy," but he thinks it may possibly be more active when applied to the delicate skin of human beings, and quotes two cases in which very severe inflammation followed the application of arsenic to the scalp. In one of these it was used as an ointment to destroy pediculi, and after a few days' application ulceration of the scalp, swelling of the cervical and salivary glands, and oedema of the eyelids, set in. It would seem highly probable in this case that there were some abrasions of the epithelium before the ointment was used. The second case is more to the point. It is extracted from the "*Acta Germanica*" for 1730:—"A student having found in the street a parcel of arsenic, his mother mistook it for hair powder, and as he had to deliver a valedictory speech at school next day, she advised him to powder himself well with it in the morning. This he accordingly did. In the middle of his speech he was attacked with acute pain of the face, and a fertile crop of pustules soon broke out upon it. A crust which was formed separated in a few weeks, and he soon completely recovered." Schultze quotes five cases similar to the latter arising from arsenic being mistaken for hair powder, one of which proved fatal. Naunyn, in von Ziemssen's *Encyclopædia*, also states that arsenic may be absorbed from the unbroken skin, but in the case under consideration it was not.

(B.) *Rapidity of Absorption*.—The first attempt having failed, it will be remembered that the "cure" was again applied between 8 30 and 9 a.m. to a surface deprived by vesication of its epithelium, and already somewhat inflamed. Almost immediately severe local pain was experienced, and within an hour constitutional disturbances commenced to manifest themselves. The rate of absorption greatly depends on the nature of the broken surface to which the arsenic is

applied. If the ulcer be chronic absorption is very slow as a rule, but if the wound be fresh, to again quote from Christison, "the experiments of Sproegel repeated by Jaeger, and more recently by Mr. Brodie, leave no doubt that it acts with at least as great rapidity as when swallowed." Whether applied externally or taken internally, symptoms manifest themselves in from one to six hours.

(C.) *The Early Symptoms.*—In my patient's case, almost immediately after application, most acute pain was experienced in the breast. In from one to three hours cerebral symptoms, giddiness, double vision, faintness, reeling gait, as if drunk, accompanied by great prostration, were noticed. In six hours symptoms of an acute gastro-enteritis—uncontrollable vomiting and diarrhoea—so severe and accompanied by so much collapse as in many cases to suggest cholera, set in. This case confirms the statement made by many toxicologists, that arsenic, in whatever manner it is introduced into the system, produces severe gastro-intestinal irritation. The early symptoms in this case could not have been much more pronounced if the poison had been taken internally, instead of being applied to the skin.

(D.) *Amount of Fatal Dose.*—Thirty grains of oxide of arsenic are stated to have been used in this cancer cure, but although we have no means of determining the amount absorbed, it is worth bearing in mind that the paste with the arsenic was left adherent to the breast for twelve hours. Fatal results have been recorded from small doses of arsenic, *e.g.*, half an ounce of Fowler's solution (2 grains of As_2O_3) in unknown doses spread over five days, and a strong servant girl was killed by two grains of the white oxide in two ounces of fly water in thirty-six hours. On the contrary, not to speak of arsenic eaters, very large doses—up to one ounce and a-half—of Fowler's solution have been taken without a fatal issue. Quantities such as this which have not been followed

by fatal results have most probably been taken on a full stomach, and promptly got rid of by emesis.

(E.) *The Period after which Secondary Nervous Symptoms set in.*—In this case the time from the application of the cancer cure, and the early acute gastro-intestinal symptoms to the commencement of nervous phenomena referable to the extremities, was between two and three weeks. According to Naunyn, these secondary symptoms manifest themselves generally in the second or third week, but sometimes not till later.

(F.) *The Secondary Nervous Symptoms.*—The case under consideration presented motor, including ataxic, sensory, reflex, vaso-motor, trophic, and finally electrical disturbances. In the early stages the motor and sensory disturbances were prominent, in the later the ataxic and paretic symptoms were the more pronounced. Dana (quoted by Ross and Bury) describes two main types of arsenical paralysis:—(1) The ordinary mixed motor and sensory paralysis, the motor troubles and atrophy being the more marked. (2) The pseudo-tabetic form in which there is no pronounced motor paralysis, but marked sensory troubles, including ataxia.

This patient, for about the first three months of her illness, corresponded tolerably well with the first type, while during the remaining months, owing to the prominence of the ataxic and sensory disturbances, she would come under the second class.

(G.) *Path and rate of Elimination of the Arsenic.*—The first examination of the urine was made with twenty-four ounces about eight weeks after the application of the cure; it was negative. The second examination was made with nearly four hundred ounces of urine, passed while the patient was taking iodide of potassium, eleven weeks after absorption. It was likewise negative. All authorities are agreed that arsenic is eliminated rapidly—to a large extent by the bile, to a less extent by the urine. Christison states that after fourteen or fifteen days it disappears from all the organs, while Wharton

and Stillé teach that the time required for complete elimination is about one month, and mention three cases in which the urine ceased to contain arsenic after the sixteenth, twenty-first, and twenty-third days respectively. They also quote a case of Dr. Gaillard's, of chronic poisoning by repeated doses of Fowler's solution, in which arsenic was detectable in the urine six and one-half weeks after the last dose, but one week later none could be found. It was consequently not to be wondered at that both my examinations were attended by negative results. They were made too late.

(H.) *The Site and Nature of the Lesion.*—From the remarkable distribution of the paralysis and the severe sensory disturbances there can be little doubt that the main lesion is a peripheral neuritis. This supposition is borne out by the very close resemblance of the symptoms to those of chronic paralysis of alcoholic origin, in which repeated pathological investigations have demonstrated the presence of a peripheral neuritis. Some authorities, however, are in favour of the view held by Popoff, who, from experimental observations on dogs, and, in one case, after examination of the cord of a rapidly fatal case of arsenical poisoning in man, teaches that the chief lesion is a diffuse myelitis. Within the last few years Erlicki and Rybalken examined the nervous system in two cases of arsenical paralysis, and found disease of both the anterior horns and the peripheral nerves.

Differential Diagnosis.—The diagnosis in this case became quite clear after my interview with the "cancer doctor." Even in the absence of the information afforded by him only two or three other hypotheses were, I think, probable:—
(1) In the very early stage hysteria was, I think, a mistake easily made. Such a diagnosis was, however, soon negatived by the absence of the knee-jerk, which, though it may be exaggerated, is present in all cases of hysteria where there is no voluntary contraction of the flexor tendons of the knee.

(2) Alcoholic paralysis, which, as far as the symptoms and physical signs in the extremities were concerned, would be practically indistinguishable from arsenical palsy. Here we had to rely mainly on the history, and I know of no reason for disbelieving the patient's statement, that she never took stimulants. The condition of the breast, conjunctival irritation, alteration in colour of hair, &c., would be inexplicable on supposition of chronic alcoholism. (3) Locomotor ataxy, though suggested by the inco-ordination and absence of knee-jerk, is excluded by the manifest impairment of muscular power, by the atrophy, by the absence of the Argyll-Robertson pupil, and of any vesical or rectal trouble.

Prognosis.—In cases of acute arsenical poisoning the greatest danger to life is during the first six days. Should these be successfully tided over, there is always the possibility of the occurrence of nervous sequelæ, such as are above described. Recovery from these is exceedingly slow, months elapsing before the patient is sufficiently convalescent to be discharged from hospital. Probably in all cases there is a greater or less amount of permanent mischief done, in some cases so slight as to be only detectable on careful examination, but in others so distinct as to interfere with the patients resuming their former avocation. This patient has recovered to a considerable degree, but, although nine months have passed away since the "cure" was applied, she is still far from being as strong as she formerly was.

Treatment.—During the days of acute pain anodynes and sedatives are generally necessary. Later on electricity, massage, and friction help to maintain the nutrition of the muscles, and to a considerable extent prevent their atrophy. As soon as the diagnosis of this case became clear, the patient was given large doses of iodide of potassium. Müller's view that this line of treatment hastens the elimination of the arsenic is not universally accepted, but I thought it worthy of a trial. Subsequent examinations proved that the arsenic

had been all eliminated before the patient had even commenced to take the drug. She was fed liberally, and nature was assisted as far as possible in carrying out her own cure.

In conclusion, I must express my thanks to my resident pupils—Messrs. Griffin, Dawson, and William Croly—who, in succession, had this patient under their care, and to my clinical clerk, Mr. Thomas Hewitt, to whom I am indebted for many of the notes incorporated in the clinical records of the case.

THE PRESIDENT said that arsenic was rapidly absorbed, as it formed no albuminate, and so offered no obstacle to its own absorption. Not only can it be absorbed from a broken surface on the exterior of the body, but it can be absorbed through the lungs by inhalation. The fact that it forms no albuminous compound, explains why it forms such an excellent paste for dentists treating carious teeth. It is thus enabled to penetrate into all the recesses of the cavity. The oxygen compounds of arsenic are highly poisonous, but when the arsenical molecule is combined with carbon, the poisonous property is greatly lessened. A very remarkable fact sometimes following the administration of arsenic, whether given by the mouth or absorbed from the skin, was the intensity of the intestinal symptoms, and this without any ulceration of the intestine. It is supposed to be due to an intense hyperæmia. The fall in the blood-pressure after a large dose of arsenic or antimony was also very noteworthy. It was strange that in this case there was no implication of the skin. Pigmentation, due to arsenic, differs according as the skin is healthy or unhealthy. If healthy, the pigmentation is diffuse and punctate; if unhealthy, as in eczema, the pigmentation is limited to the diseased portions. Arsenic was very rapidly excreted by the kidneys. In a case in which it was applied to the cervix uteri for cancer, it was detected in the urine within 8 hours.

MR. WERNER said that he had met with a similar "cancer cure" some years ago, which was brought to him by a medical student for analysis. It was a mixture of charcoal and arsenic. Sometimes these "cures" consisted of inert and harmless powders. One to cure deafness consisted of 3 or 4 grains of arrowroot, while other powders guaranteed to cure all tumours were nothing more than sugar of milk.

SMALL-POX TEMPERATURE CHARTS.

By H. C. DRURY, M.D., F.R.C.P.I.;

Physician to Cork-street Fever Hospital.

[Read in the Section of Medicine, January 11, 1895.]

AFTER the very full and exhaustive paper upon small-pox which we have already heard, I will not occupy the time of the Academy very long with the remarks I have to make on the same subject.

It was suggested to me that the exhibition of these charts might prove interesting this evening, and I have to thank Dr. Gunn for kindly allowing me to use them, as they represent cases which have been under his care in Cork-street Hospital.

The ideas which I had derived from books, as to the course of temperature in small-pox, have been greatly modified since I have seen a considerable number of cases. If one walks round a large ward of typhoid, typhus, scarlet fever, or measles cases, one notes, without much difficulty, a certain family resemblance in the charts of each group of these fevers. This is not noted with the same ease in the case of variola. Again, I think that with the examples I have I shall be able to show that the range of temperature bears but little relation to the severity of the case—either as to ultimate prognosis or to the amount and severity of the eruption.

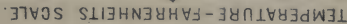
I will divide the charts into three type classes—I. Those in which there is a primary, followed by a distinct secondary fever. II. Those in which the fever is quite irregular without any typical feature. III. Those in which the fever of invasion is the only one seen. It must be remembered that these charts have not been specially

CLASS 1:- N93.

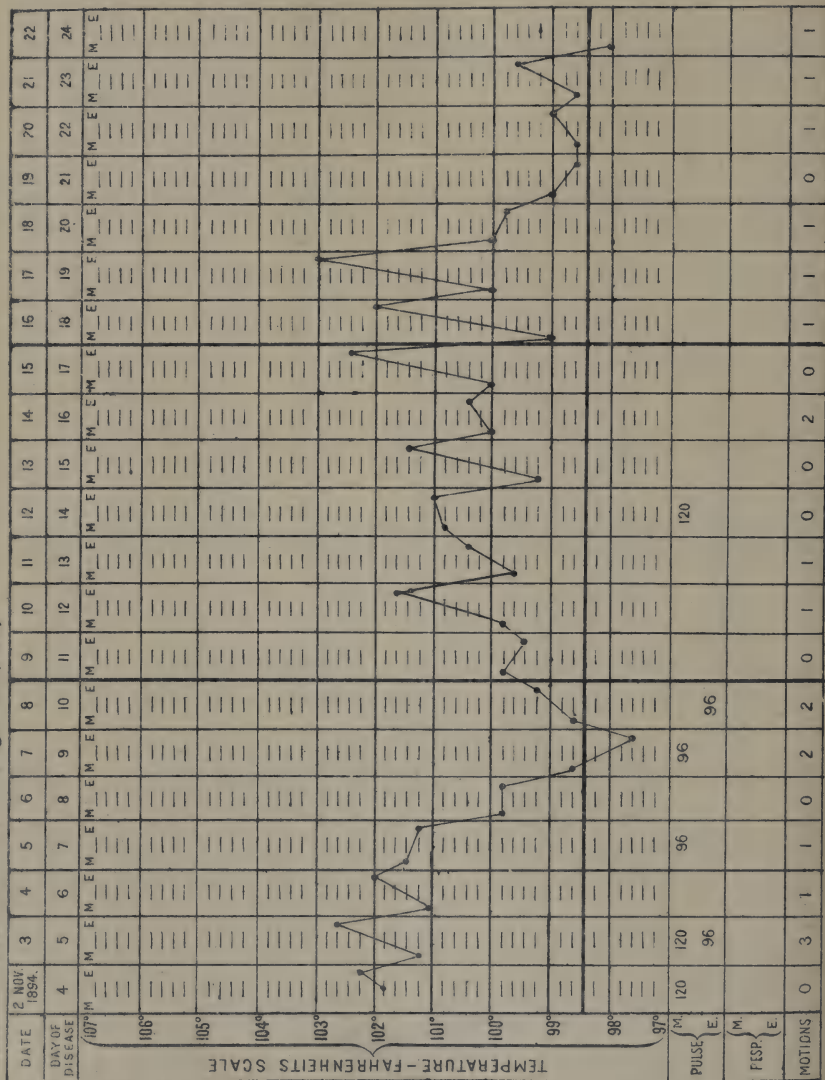
DATE	3 NOV 1894	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DAY OF DISEASE	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
TEMPERATURE - FAHRENHEITS SCALE	107°	107°	106°	105°	104°	103°	102°	101°	100°	99°	98°	97°									
PULSE	109	105	96	120	120	120	120	120	120	120	120	120	108								
RESP	108	108	84																		
MOTIONS	1	2	2	1	2	2	1	1	1	1	1	2	2	1	1	1	2	2	1	2	1

CLASS I. — N^o 2.

CLASS I. — N^o 2.



CLASS I - No. 1. J. O'N., male, aged 45 (760).



selected—they were taken at random simply as examples of different variola temperatures. The details of the cases were made out afterwards.

Now, although I first take that class in which there is a primary and secondary fever, I do so only because I think it is the type which we most commonly carry in our minds when the course of variola is mentioned—yet it has been by no means the most common met with in the Cork-street cases, though latterly it has been more commonly seen than in the early part of the present epidemic. On the contrary, for every one showing this course of temperature there are three or four showing quite different features.

SERIES I.—I hand round three charts of this type—for one of which I have to thank Dr. J. W. Moore. I have included it because he has fully recorded the case in the *Dub. Journ. Med. Sci.*, Dec., 1894.

The *first* is that of an old man, forty-five years of age (?). He had a very profuse semi-confluent rash—but in spite of his age or aged appearance (for he looked like a man of sixty-five to seventy), his fever ran an absolutely uncomplicated course; he fed well, slept well, had no delirium, and never gave any cause for uneasiness with regard to his ultimate recovery. The only bad symptom he had was a pulse of 120 on a few occasions for a short period.

The *second* chart is that of Dr. Moore's case—here, on the other hand, a healthy young man. His fever runs a long course, showing a well-marked secondary fever, but without any complication, unless a prodromal rash be considered as such.

The *third* chart presents much the same features—it is also that of a healthy young man—yet he had a terrible struggle for existence. His rash was confluent over the greater part of his body; he was wildly delirious; from day to day it was hardly thought possible he would see

another sunrise; and even when the real variola temperature was over he still maintained a high pyæmic temperature for nearly three weeks, due to suppuration about the legs and trunk.

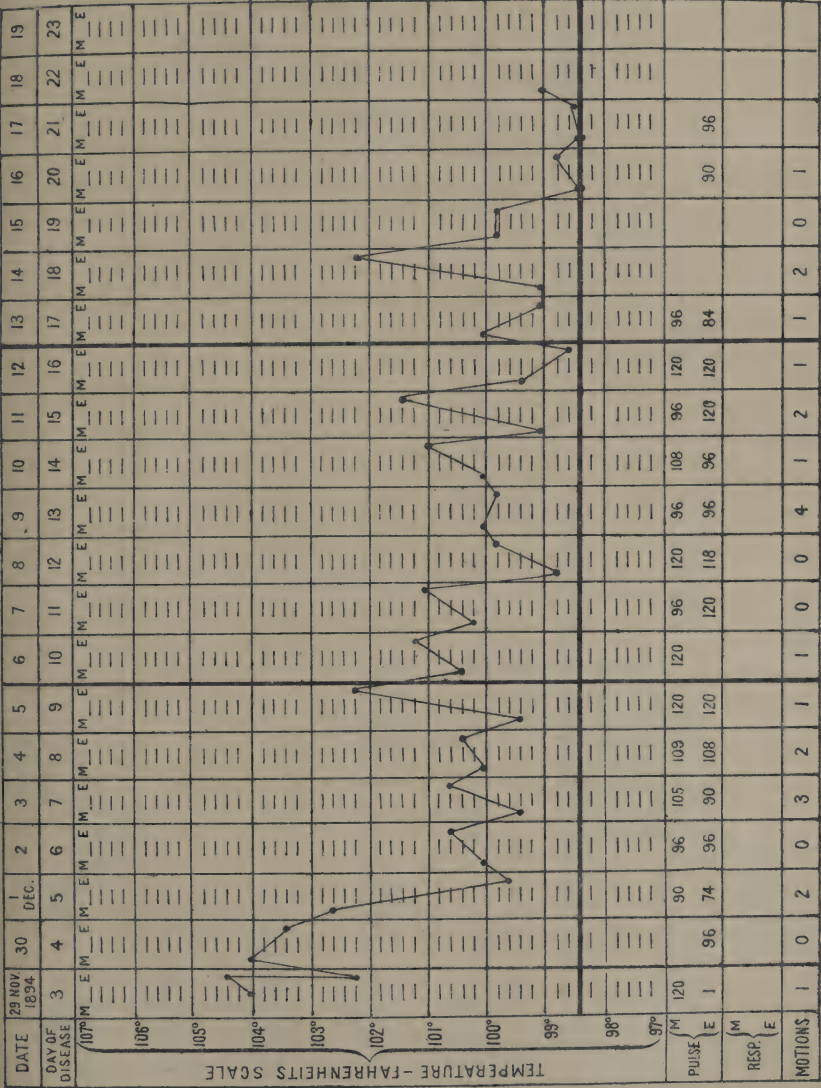
These three charts then, though they exhibit well the features of primary and secondary fever, bear a record of very different cases—1st. Semi-confluent in an old man. 2nd. Discrete in a young man—both running a mild course. 3rd. Confluent in a young man—which runs a very dangerous course throughout.

SERIES II. contains those in which the fever runs a quite irregular course—illustrated by five charts; these are much more numerous than charts of the first series.

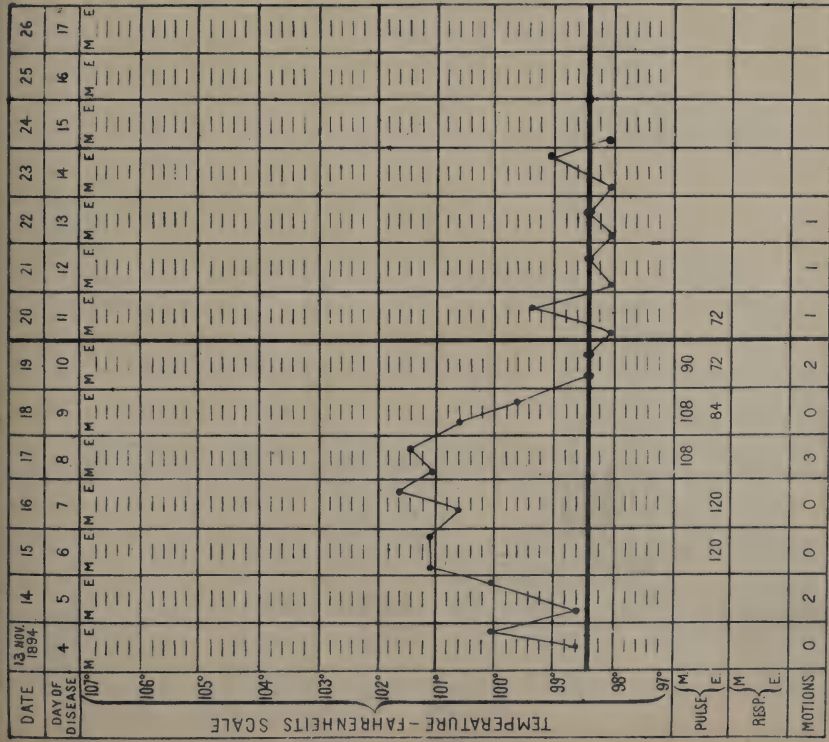
The *first* evidently commenced with a high temperature, falling on the fifth day, but it never touches normal till the middle of third week—showing, therefore, no true secondary fever, but having a range between 100° and 101° F.—yet the man was violently delirious for a fortnight, and his case was one of great anxiety throughout. His rash was peculiarly slow in coming out, hardly any had appeared on the sixth day, and it was still papular on the ninth or tenth day.

The *second* shows a kind of short spurious secondary fever, which reached its maximum at 101·5° F. Yet this was the case of a confirmed drunkard. He had a confluent rash on the face, and a copious discrete rash all over the body and limbs. He was wildly delirious, and for two or three days his life was despaired of. On the fifteenth day he was up walking about, feeling perfectly well, but a most horrible and loathsome spectacle—his face one thick coating of dark-brown scab.

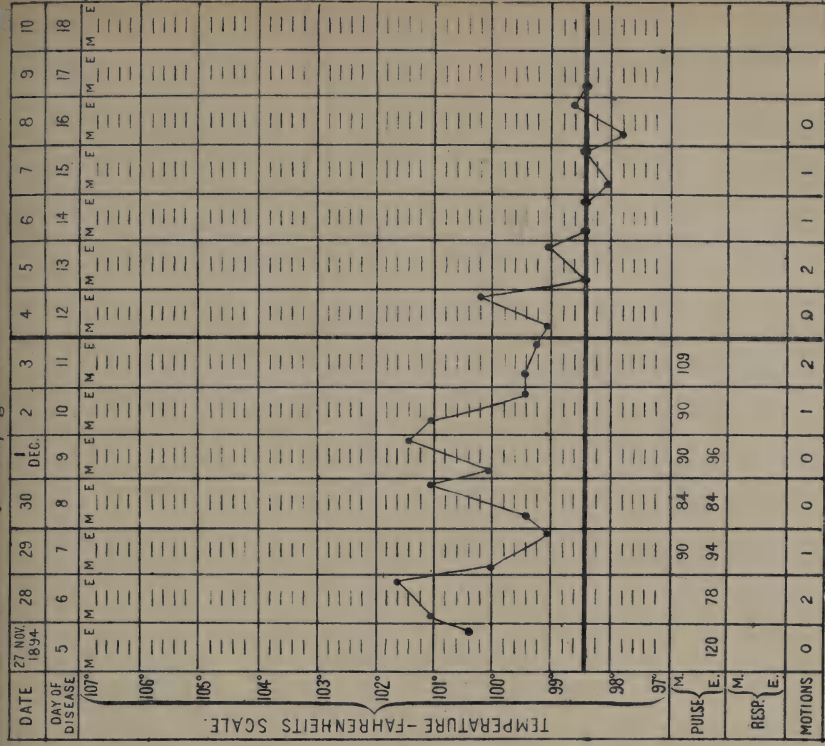
The *third*, also a man of very alcoholic habits. He commenced with an almost black purpuric prodromal rash over lower part of abdomen and upper part of thighs. He

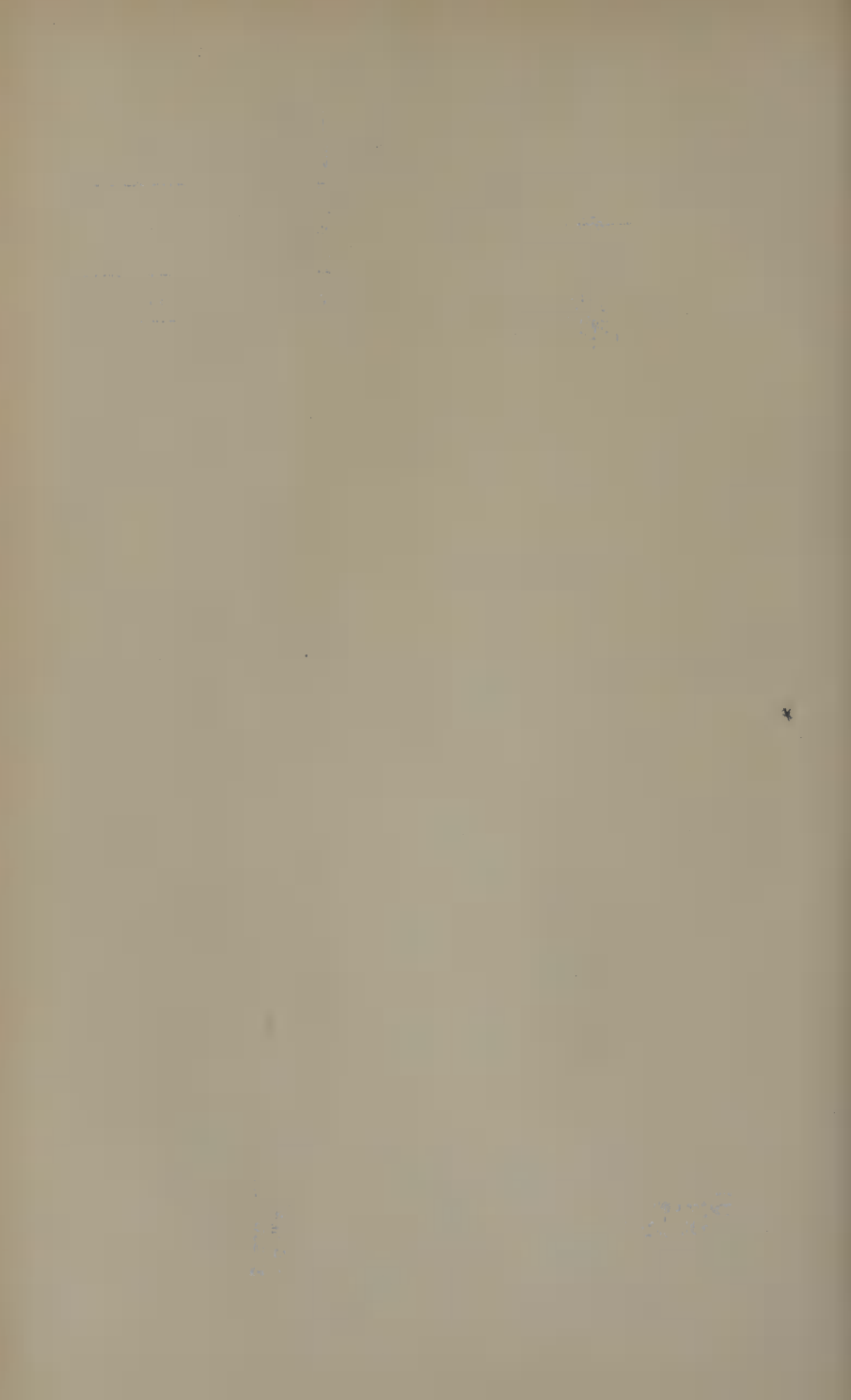


CLASS II. — N°2. J. H., male, aged 33.

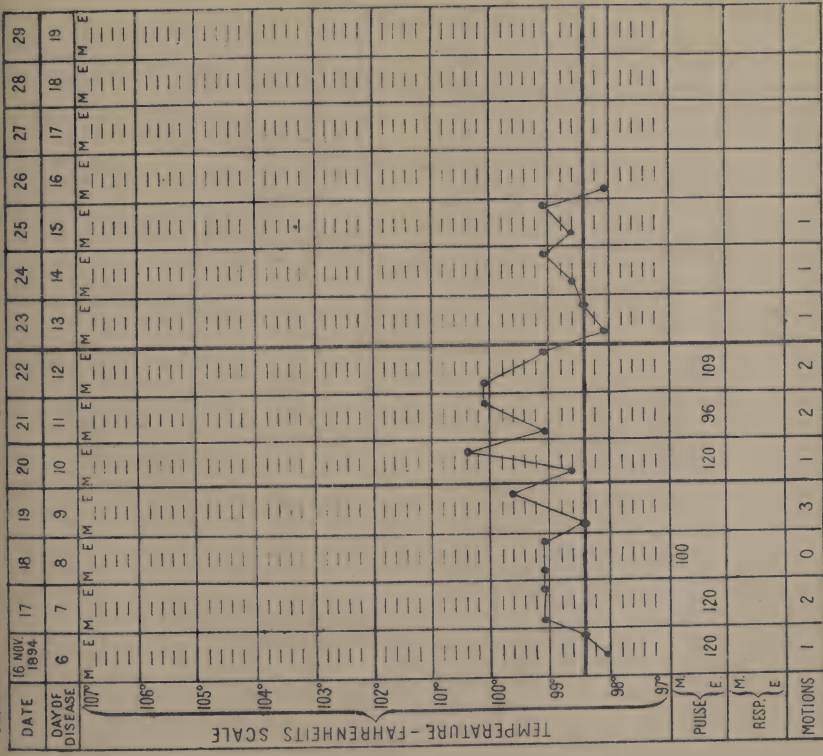


CLASS II. — N°3. H. Q., male, aged 31

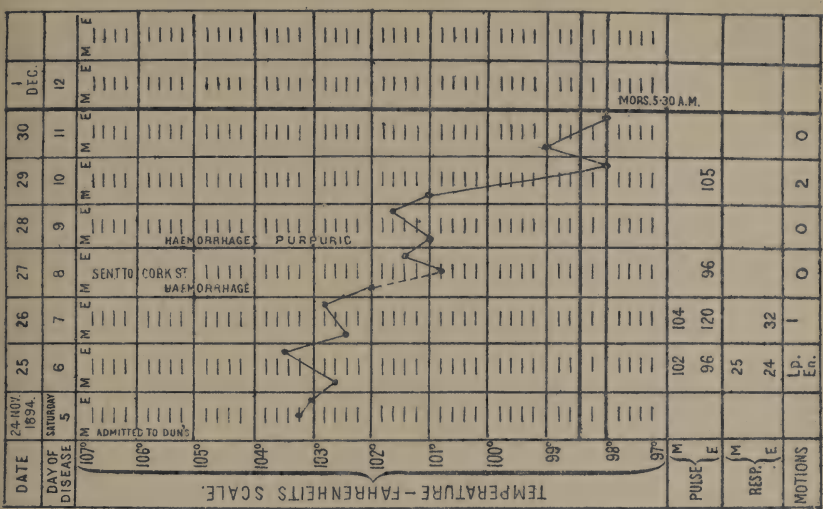




CLASS II. - N°4. A. K., female, aged 8.



CLASS II. - N°5. M. M., male, aged 13.



CLASS III—No. 1 M. F., female, aged 15.

DATE	13 NOV 1894	14	15	16	17	18	19	20	21	22	23	24
DAY OF DISEASE	2	3	4	5	6	7	8	9	10	11	12	13
	M	E	M	E	M	E	M	E	M	E	M	E
TEMPERATURE - FAHRENHEITS SCALE	104.5	103.5	102.5	101.5	100.5	99.5	98.5	97.5	96.5	95.5	94.5	93.5
PULSE	120	120	120	120	120	120	120	120	120	120	120	120
RESP	120	120	120	120	120	120	120	120	120	120	120	120
MOTIONS	1	3	1	1	2	1	2	1	1	1	1	1

was delirious, though not violent, until the twelfth day. The true eruption was copious all over body and semi-confluent on face. Yet his temperature chart showed nothing either typical or remarkable—there is no record above $101\cdot5^{\circ}$ F. Though for some days it was doubtful whether he would “pull through” or not, he made an excellent recovery, but has only this day (8th January) been discharged from hospital.

The *fourth* and *fifth* were unvaccinated cases, yet the charts present no similarity to each other, nor to any others I have shown. Both had a confluent rash No. 4 had a few purpuric spots, but recovered; temperature never having risen above $100\cdot5^{\circ}$ F. No. 5 had also purpuric rash, but besides hæmorrhage from mouth, and died on the twelfth day; temperature steadily falling from $103\cdot5^{\circ}$ F.

SERIES III. consists of those which have a high invasion fever, which falls at once on the appearance of the rash, and either remains down or scarcely shows any elevation above normal. I exhibit three charts, but could have procured examples of this type by the dozen—they appeared to be, some time ago, by far the most numerous.

The *first* is that of a young girl of fifteen, unvaccinated. She began with a temperature on second day of 105° F.; on the fourth day it was normal; on the seventh and eighth day it rose to 100° and 101° F. with delirium; on thirteenth she was up and feeling quite well, though covered with scabs so as to be unrecognisable. The rash was discrete.

The *second*, a young man, aged twenty. The rash was almost identical in distribution and intensity with the previous unvaccinated case. He showed one vaccination mark. The temperature fell from $104\cdot2^{\circ}$ F. on fourth day to 99° F. on fifth day; gave one little jump to $100\cdot4^{\circ}$ F. on eighth day, and then subsided altogether.

The *third* compares notably with the previous two. On

the third day his temperature stood at 104·6° F.; on fourth, evening, at 98·8° F., and did not again rise—in fact, almost identical with the others—but they had a copious rash. He had about six spots on face and six on hands; he felt very sick indeed for the first three days; on the fourth he felt perfectly well.

I have endeavoured to reduce the erratic charts one finds in a large ward of variola cases to as simple a classification as possible, but it will be seen that it is more useful for purpose of description than of anything else. Very few conclusions can be drawn either from an individual reading or from any chart taken as a whole. We are led to believe from text-books that those of the first class are to be expected in unmodified or very slightly modified cases, while those of the third are found in partially protected cases. The three charts I exhibited of the first class were those of cases at some time vaccinated; one of the third class was that of an unvaccinated person. The patients with short charts of the second class, and some of those with charts of the third class, had worse and more copious eruptions than are sometimes seen in the first class, and will take as long or longer to become free from infection. An early high temperature is no indication of a severe case, as is seen by III., 3. Neither is a low temperature an indication of a mild case—*e.g.*, II., 2 and 3.

One point is very worthy of notice, and is, to my mind, very remarkable. That is the quiet condition of the pulse met with as a general rule, and the strength maintained by the heart all through long and severe cases. The average pulse rate, I should say, is little over 100, and signs of heart failure are almost certainly a premonitory symptom of a fatal termination.

Finally, though not strictly concerned with the matter I have been referring to, I would point to the results of

re-vaccination. And I think that what I have to say is more important than anything I have said up to the present, and am glad to be able to give it the publicity of this place. Yesterday I addressed the following queries to Dr. Day, Cork-street, who has very kindly promptly replied:—

Q.—How many cases of variola were admitted to Cork-street Hospital in 1894 up to December 31st?

A.—488.

Q.—How many cases of variola admitted in persons *successfully* re-vaccinated within twelve months; the re-vaccination having “taken” at least fourteen days previous to invasion. (In other words, before exposure to infection)?

A.—None.

DR. TWEEDY said he thought that a good many cases of small-pox were passed off as chicken-pox. He had seen a child aged seven years covered with a discrete vesicular eruption, of which most of the vesicles were umbilicated. He was told that there were several children in a neighbouring house who had been similarly affected and had run about all the time. He was in doubt as to whether it was a case of variola or varicella, but concluded that it was the former and sent his case to hospital.

DR. BURGESS said that in 1887 he was asked to see a case which another doctor first considered to be rheumatic fever and then scarlatina. When he saw it he could not make up his mind what it was, but he waited for a couple of days and by that time there was a distinct rash. This was the first case of the epidemic of 1887.

DR. DAY said that in the early diagnosis between small-pox and chicken-pox the eruption on the throat was an important point. In the former a papule might be present on the soft or hard palate or on the tongue. In chicken-pox it was a vesicle. A woman had been treated in Cork-street for small-pox who was six months pregnant and yet did not abort. Several children were treated for both scarlatina and small-pox at the same time. The acute cases of scarlatina seemed to have escaped. He said he

believed that chicken-pox occurred in adults and also that the vesicles were umbilicated.

DR. HORNE said that he did not see why a patient suffering from small-pox should be any more liable to abortion than when suffering from any other fever. It was all a matter of temperature. Provided this did not exceed 104° , the danger of abortion was not greater than in the other fevers. He thought that the eruption on the throat was a very important point in the diagnosis at an early stage. He would like to ask Dr. O'Carroll whether any children under ten years of age had been admitted to the Hardwicke, suffering from small-pox.

DR. PARSONS mentioned three cases. The first was that of a woman who had been treated for scarlatina in Cork-street, and on recovery had been sent to one of the convalescent homes. Three days afterwards she fell ill again, and shortly after the eruption of small-pox appeared. Another was that of a little unvaccinated child who one morning was noticed to have a papular eruption on its body. The nurse stated that the child seemed quite well on the previous day. He had considerable difficulty in deciding whether it was a case of chicken-pox or small-pox, but the abundance of the rash and the rise of temperature decided him in favour of the latter. The third case was that of a man who walked into the dispensary. He had been feeling unwell for three or four days, but did not give up work. He had a well-marked papular eruption, but no rise of temperature, and affirmed that he now felt quite well. He had not been revaccinated, but had three distinct old marks.

DR. J. W. MOORE said that the way the eruption appears in varicella is important. Very often there is no papule, but within a few hours a clear vesicle appears on the skin. He mentioned a case of scarlatina which developed chicken-pox.

DR. A. N. MONTGOMERY said he was pleased to hear that no well re-vaccinated case had been admitted to Cork-street Hospital suffering from small-pox. He said that although the vesicle in a re-vaccinated person might, sometimes on the 8th day, resemble a primary vesicle, yet the material obtained from it should not be used for the purpose of vaccination or re-vaccination. As showing the necessity of a very careful search for vaccination cicatrices being made in patients suffering from modified small-pox, before they were recorded as unvaccinated, he alluded to such a case which had come under his notice some years ago, in which he had found

a well-marked vaccination cicatrix on the posterior aspect of the arm, which had been overlooked.

The PRESIDENT said that the difficulties of the diagnosis between variola and varicella were perhaps exaggerated. He also said that it was quite well established that the vesicles of chicken-pox were multilocular and were often umbilicated. The greater frequency of umbilication in variola depended on, first, the less acuity of the pathological process; and, secondly, because the epithelial cells were œdematous and underwent what was described as a "ballooning degeneration." They became distended and the nuclei were broken up.

DR. O'CARROLL, in reply to Dr. Horne's question, said that several cases of children under ten years of age had been admitted to the Hardwicke, but that none of the vaccinated ones had died. All the people connected with the hospital had been re-vaccinated at the commencement of the epidemic, but four months afterwards a laundry maid on whom the vaccination had caused a sore arm was admitted to the wards suffering from a rash which he regarded as that of small-pox.

DR DRURY replied.

ECCHYMOSIS FOLLOWING INSANE EXCITEMENT.

By W. R. DAWSON, M.D. UNIV. DUBL.;

Assistant Medical Superintendent, Farnham House Asylum, Finglas,
Dublin;

Late Assistant Physician, Royal Edinburgh Asylum.

[Read in the Section of Medicine, February 22, 1895.]

NOTWITHSTANDING the large amount of attention that has of late years been paid to the elucidation of diseases characterised by hæmorrhages into or beneath the skin, an attention which has resulted in the growing certainty that the hæmorrhage in special purpuric disease is due to bacterial embolism, there still remains a considerable number of cases which are as yet very imperfectly explained. Of these, some of the most interesting are the cases where hæmorrhage occurs into the skin in the course of disease of the nervous system, whether functional or organic, and the predominant factor in the causation of which appears to be nervous influence, although, as Unna recently stated, it is still questionable whether hæmorrhage occurs merely from the action of the nervous system upon the blood-vessels. Probably several factors combine in the production of such hæmorrhages, and this I take to have occurred in the case which I have the honour to lay before you this evening.

CASE.—Mrs. A. B., a stout, fair, florid woman of fifty years of age, was admitted to the Royal Edinburgh Asylum, on August 13th, 1890, suffering from delusional melancholia. She is the wife of a sea-captain, and had made several voyages with her husband, but there is no record of any attack of a malarial nature. Her family history is not quite satisfactory, her mother having suffered from epilepsy, whilst all the children of one of her sisters had died

in convulsions. She herself had led a hard-working steady life, but, though of a kindly disposition, was inclined to be solitary and unsocial, and at the same time was easily excited. Her climacteric was late in coming on, and she suffered from endometritis and uterine displacement, which gave rise to pains and feelings of discomfort in connection with the uterus. The immediate cause of her mental illness, however, was an attack of influenza, which had taken place some five months before her admission—in fact, she was one of eleven cases of insanity associated with this disorder, published by Dr. Elkins^a in 1893. She first began to take causeless ill-will against people, and became emotional and querulous, lost her sleep, and used to sit up at night writing letters. Her ill-will gradually deepened to extreme delusions of suspicion and persecution, directed against her doctor, whom she accused of injuring her with instruments and wishing to poison her, as well as against her husband and daughters, who, she thought, were plotting against her. She took violent fits of crying, struck her daughters at times, and became so noisy and destructive that at length she had to be sent to the asylum.

On admission she was very miserable, crying loudly and volubly bemoaning her fate, and full of suspicious delusions, whilst at the same time conscious of her illness. In addition to the uterine sensations before alluded to, she complained of giddiness and a sensation of weight on the top of her head. The heart's action was feeble, the pulse weak and rapid (100), but the temperature was normal, nor could any further disorder be detected.

The patient improved rapidly at first, and remained better for some months, though never well enough to leave, and her emotional equilibrium was still easily upset—*e.g.*, by a visit from her daughter. She soon, however, relapsed and became noisy and unmanageable, and for the past four years has remained very much in the same condition, physically in fair health and very stout, but delusional and suspicious, and subject every ten or fourteen days to exacerbations which manifest themselves as outbursts of violent indignant grief, during which she is very noisy and abusive and has at times to be secluded. The day after such attacks she commonly has to remain in bed, suffering from headache, giddiness, and pain in the chest. She sometimes prescribes a dose of castor oil for herself, and then for some days is quiet and comparatively good-humoured, but gradually

^a *Influenza as a cause of Insanity.* Edinb. Hosp. Rep., Vol. I., 312 (Case 3, p. 315).

works up to a similar climax again; a premonitory symptom of the coming explosion being the writing of voluminous letters, closely written and crossed, setting forth her history and wrongs, and directed to her relations, the asylum officers, or the inspectors. During the attacks alluded to, the hysterical character of which is obvious, the temperature when taken was never found to be raised.

On several occasions during 1890 and 1891 the fits of excitement were followed by the appearance of erythematous patches, symmetrical in distribution, and situated mostly on the arms, but also on the breast. These were, perhaps, merely local accentuations of a general erythema which was also present. They were not noticed during the two following years, but may possibly have been present; Mrs. A. B. being a very difficult subject to deal with on account of her suspicions, so that, unless she herself called attention to the eruption, it might very well pass unobserved.

On or about the 25th April, 1894—*i.e.*, four years from the commencement of the patient's mental illness—an attack of excitement having just passed off, there appeared a purpuric eruption of small spots on the chest and back of shoulders, immediately followed by larger extravasations which were situated on one shoulder, both wrists, and the right thigh, just above the knee, appearances which the delusional suspicion of the patient promptly fixed on as evidence of poisoning. A mixture containing bromide of potassium and antipyrin, and, a few days later, one containing tincture of perchloride of iron, were administered, and there was no return of excitement or ecchymosis for over a month. About the 31st May or 1st June, however, there was another attack of excitement, and on June 2nd a large black patch—resembling a severe bruise, and in the centre of which, under a pale spot, was a small hard lump—appeared on the right wrist, from which a slighter degree of discoloration spread all over the back of the hand and wrist. Spots also appeared on both arms and shoulders. There were also swelling and pain in the discoloured area on the wrist, neither of which existed elsewhere. On this occasion the fits of excitement were repeated, some four having occurred in the earlier part of June, and fresh spots kept coming out on the arms and other parts. All these spots had exactly the appearance of ordinary bruises, and varied in size from that of a threepenny piece or even smaller up to one large enough to cover, as has been stated, the back of the wrist and hand. At the time of this attack some blood was evacuated by the mouth on one occasion, but I am unable to

give its source, and it never recurred. About the middle of June the excitement had passed away, and there were no more spots until after the next fit.

On June 26th, Mrs. A. B., who was of a curious disposition, ventured too near a patient who was struggling with his attendants in the grounds, and received a kick in the left iliac region. There was some blackness and pain, but she did not complain much of it at the time. On July 3rd, however, at a picnic which she was judged well enough to attend, she became furiously excited and even violent, and on the next day a fresh eruption of spots began, of which several eventually appeared on the fronts of both legs, and a small one on the right forearm. But in addition to these the iliac bruise extended over the lower left portion of the abdomen and down into the groin, at the same time assuming an intense purple-brown colour; there was also much stinging pain in the region, which lasted to some extent for a time, at all events, after the discoloration had disappeared. Iron was administered, but the patient could not be got to take it after a time, asserting that it was given in order to bring out the spots so that I might photograph them! I had attempted to do so a few days previously. About July 24th, slighter excitement was followed by spots on the centre of the chest, and on the shoulders and thighs; and again in the early part of August there was excitement, as a result of which a bruise-like spot about 1-in. square appeared in the right palm at the base of the first finger, extending to the back between it and the middle finger, and a black patch was observed to the inner side of the right thigh, and a number of purpuric spots about the lower part of both calves and ankles, there being also some soreness in the latter region. On August 13th a similar fit was followed by a very small spot on the extreme tip of the tongue, which disappeared in two or three days, the gums being at the same time sore, and looking a little spongy. About the 28th August, after some excitement, a spot appeared on the left hand between the little and ring fingers, and one on the left breast. Very early in the morning of the 31st there was a faint fit, and the patient was obliged to remain in bed this day, with dizziness and "flapping of the heart." A small fresh spot appeared on the left forearm, and there was some soreness of the left calf. Lastly, a large ecchymosis on the back of the left elbow, and a small one in the middle of the forearm in front, were noticed after another attack in the middle of September.

[Since the paper was read, the following particulars of the further progress of the case were kindly sent me by Dr. Middlemass:—

A very violent outbreak occurred about the end of September, on the day following which a number of subcutaneous ecchymoses were observed, one on the right upper arm being especially dark and well-marked. The excitement gradually passed off without the eruption of any further spots, and the patient appears to have had no further outburst until February 5th, 1895, being meanwhile well enough to take part in the Christmas festivities. On the morning of the 5th she quite suddenly broke out into a fit of excitement, and a few hours after a few slight ecchymoses were noticed. There is, however, a doubt whether they appeared *after* the excitement. From that date there has been so much improvement as to suggest a hope of her recovery. Occasional attacks of excitement, and ecchymoses, have since occurred, but the former have been less frequent and severe, and the latter much less marked.]

It will thus be seen that every recurrence of excitement after the end of April up to the close of my record, was followed by an eruption of spots of ecchymosis. The fits themselves followed in a general way the type of that before described—viz., a period of violent angry excitement and shouting, followed by a day of headache, giddiness, pain in the thorax, and sometimes palpitation, which usually compelled the patient to remain in bed, and on which the spots appeared first. The spots themselves varied greatly both in number, size, and situation, appearing on the whole to favour the extremities. On some occasions there was a decided symmetry, but most often not. As regards their colour, they had exactly the appearance of bruises, both when fresh and as they passed away, being at first of the bluish colour characteristic of hæmorrhage into the deeper layers of the cutis. Only in the case of the large hæmorrhage of traumatic origin did the brownish colour indicate that the more

superficial cutaneous layers were involved. I only obtained a sample of blood on one occasion, which was examined under so great disadvantages that little could be made of it. There seemed, however, to be a number of microcytes present. The patient's temperature whenever taken was found to be normal during the period of prostration. The heart was rather feeble in its action.

To sum up briefly what seem to me the most pregnant facts in this case, we have here a woman of a florid complexion, with a skin predisposed to erythematous congestion, and a weak heart, seized with a form of mental affection (melancholia) in which disease of the circulatory system is especially common,^a and liable to frequently-recurring fits of excitement of a hysterical type, such as are known to cause active hyperæmia of the cutaneous vessels, in whom, after four years, every attack of excitement has come to be followed by hæmorrhages of greater or less extent into the deeper layers of the cutis, these hæmorrhages being situated in almost all regions of the body except the face, apparently beginning somewhat suddenly, and at times showing a tendency to symmetry. At the same time we find the hæmorrhagic tendency greatly augmented by traumatic injury to the blood-vessels, and a certain, though slight, amount of implication of the mucous membranes; while, lastly, the absence of high temperature negatives the presence of any acute specific disorder.

So far as I have been able to examine the literature of the subject, I have only met with one other case in which the hæmorrhage appeared to be directly due to insane excitement. This was the case, published by Drs. Savage and Percy Smith,^b of a man, forty years of age, who was admitted to Bethlem Hospital in 1886. He had been steady, indus-

^a Dr. C. F. Beadles. *Journal of Mental Science*. Vol. XLI., p. 33.

^b *Journal of Mental Science*. Jan., 1886. P. 501.

trious, and cheerful. Ten days before admission he was seized with a pain in his head and neck, became emotional and depressed, and finally maniacal, with delusions of suspicion. After admission he was restless, violent, and weak, dirty in his habits, and required to be fed with the stomach pump. The temperature gradually rose to over 103° . Nearly three weeks after admission he became unconscious, with stertorous breathing, and died about five hours later. He had many bruise-like marks on the arms and trunk on admission, and other patches subsequently came out, appearing in the night, and soon acquiring a bronze-like colour. They were symmetrically disposed, and, some so placed that no ordinary bruises could arise in the situation, were situated about the elbows and arms, over the anterior superior spines of the ilia, the sides of the gluteal regions, the knees, and fronts of the legs, and varied greatly in size. There was also an attack of severe hæmaturia, and a gelatinous false membrane, with recent clots, was found beneath the dura mater.

There are obvious resemblances in the appearance, distribution, and mode of occurrence of the spots in this case and in that which forms the subject of the present paper, if allowance be made for the much more acute course of the disease here. But Savage's case differs in the immediate appearance of the purpura, the high temperature, the presence of other hæmorrhages, and, above all, in the muscular violence, which was very rare in my case. Many of the spots were situated exactly in positions where a weak, restless patient would be likely to bruise himself.

M. Klippel^a published a case of non-traumatic symmetrical ecchymosis of the face in an old female dement, which began at the inner canthi and gradually overspread all the upper

^a Lancet. 1885. II., p. 815. (Abstract of article in Ann. Medico-chirurg., No. 8).

part of the face, passed through the same stages as a bruise, and finally disappeared. There were also two symmetrical spots on the thighs. No other symptoms of purpura or scurvy appeared, and the temperature was not raised. Here, however, the ecchymosis does not seem to have followed any fit of excitement, and the symptoms of the case as described are suggestive of locomotor ataxy.

With the exception of a case, noted by Dr. Savage,^a of general paralysis, in which a purpuric eruption symmetrically distributed on the thighs and legs came out some days after an injury to the left elbow, I have been unable to find any other record of non-traumatic ecchymoses in the insane. It will be observed that no mention has been made of hæmatoma auris; but this omission is due to the fact that the most recent researches^b seem to show this lesion to be probably due to a degeneration of the auricular cartilage, and not to have anything to do with the skin at all. Of the ease with which *traumatic* cutaneous and subcutaneous effusions of blood can be produced in the insane there seems to be no question.

Turning now to ordinary nervous disease, we find that there are three principal disorders with which hæmorrhage into the skin has been associated—viz., epilepsy, locomotor ataxy, and, most important in the present connection, hysteria. (Hæmorrhage following neuralgic pain is also described.) In the first the hæmorrhages must obviously be due to the extreme congestion during the seizure, aided, perhaps, in a manner which we shall presently see, by the tightening of the skin owing to muscular contraction. Vascular disease is excluded by the fact that the hæmorrhage has occurred in young, healthy persons, with a first attack.^c The so-called

^a Journal of Mental Science. Jan., 1886. P. 507.

^b See paper by Drs. Middlemass and Robertson. Edinburgh Med. Journ. Dec., 1894. P. 512.

^c Crossmann. Med. Times and Gazette. 1876. II., p. 723.

tabetic purpura would seem to point to vascular disease. In hysteria, however, the occurrence of hæmorrhage does not seem so easy to account for, and the conditions here most closely resemble those in the present case. Of the occurrence of hæmorrhage both into and from the skin in hysteria there can be no doubt, although the subject has been confused with much imposture. Gowers,^a it is true, will only admit that "it is probable that, in rare cases, the vasomotor disturbance may lead to the occurrence of small hæmorrhages into the skin;" but Ross,^b Strümpel,^c &c., state positively that such occur; and as regards bleeding from the skin—*i.e.*, from the vessels of the sweat-glands, cases have been recorded by Franque^d and Bourneville^e which leave no doubt on the point. In the cases alluded to it is important to note that, in both, the bleeding occurred in connection with hysterical *convulsions*.

Before trying to draw any deduction as to the probable mode of occurrence of the hæmorrhage in such cases, I must crave your indulgence if I allude very briefly to the most recent and authoritative pronouncement as to the pathology of cutaneous and subcutaneous hæmorrhage in general—I mean the very interesting and instructive article on the subject in Unna's recent work on dermic pathology.^f

In the first place, he finds that in almost all skin hæmorrhages, from whatever cause, there is really rupture of a vessel, and only in few and peculiar cases, a diapedesis; but although the latter can only be present when the hæmorrhages are small, of slow growth, and situated exclusively in the papillæ or epithelium, it no doubt frequently accompanies

^a Diseases of the Nervous System. Vol. II., p. 1015.

^b Treatise on Diseases of the Nervous System. Vol. II., p. 879.

^c Textbook of Medicine (Eng. ed.). P. 761.

^d Med. Times and Gazette. 1865. I., p. 590. (Abstract from Schmidt's Jahrb. 1864. No. 7.)

^e Lancet. 1875. II., p. 356. (Abstract.)

^f Die Histopathologie der Hautkrankheiten. 1894. P. 48.

rupture. The mechanics of rupture Unna explains very ingeniously, and his explanation is well borne out by histological facts. The lesion is almost always found to have taken place in the deepest layer of the cutis, or the most superficial of the subcutaneous tissue—*i.e.*, at the point where the delicate vessels running in the firm cutaneous tissue acquire greatly strengthened coats before entering the looser underlying material. The rupture is found to be situated in the thin-walled portion, and the deduction is that any cause, such as distension of the cutaneous vessels at a time when the cutis cannot expand, which would cause the thin-walled portion to expand beyond the shelter of the firm connective-tissue layer, would be liable to produce rupture. This altogether disposes of the old theory of hæmorrhage due to changes in the blood itself, which, in fact, Unna definitely rejects, as he does, also, the predisposing influence of ordinary thrombi, of any disease causing thickening of the vessel-walls, embolism, &c. The only causes of skin hæmorrhage, he says, to be discussed in future are :—

- (1.) Embolism with specific hæmorrhagic bacteria.
- (2.) Congenital defect of the vessel-walls, as in hæmophilia.
- (3.) Congestive processes, not alone, but in combination with each other, or with simultaneous vascular paralysis, whilst hypostatic congestion, perhaps, plays the most important preparatory rôle.

With the first of these causes we have, obviously, nothing to do, and may pass on at once to the third, which alone can explain hæmorrhage of nervous origin. On the causation of this Unna declines to give a positive opinion, for want of sufficient evidence, but suggests the theory of venous spasms with simultaneous arterial distension as a possible cause. Probably small hæmorrhages, such as those in epilepsy, are in many cases due to diapedesis; but the larger bruise-like hæmorrhages of rapid occurrence can only be the result of

rupture. The appearance of those in the case described, as well as in the reported cases alluded to, would seem to show that the bleeding had taken place at the level which Unna considers typical—*i.e.* in the deeper layers of the cutis and most superficial of the subcutaneous tissue. We must, therefore, suppose some such form of combined active and passive congestion to have taken place, and this, in my case, is, I think, not far to seek. In the first place, the patient was a fair, fresh-complexioned woman of the type in whom cutaneous flushings are apt to occur, she was at a time of life when such are common, and subject to mental excitement of a hysterical type, such as is known to cause dilatation of the cutaneous arteries, and which, in point of fact, did produce an erythema as we have seen. Add to this, the fact of tardy venous return, due to weakness of her heart, and we have quite sufficient data to account for very considerable distension of the cutaneous vessels, which might quite conceivably lead to rupture. But why did not this occur until four years after the conditions were established, the fits not having increased in severity? There can only be one answer to this question—*viz.*, vascular degeneration. As regards the character of this, it would be, of course, idle to conjecture in the absence of any histological investigation, but I think it quite possible that it may merely consist of a lowered vitality of the vessel-walls, such a lowered vitality as is known to exist in many or all of the tissues in insanity, and which may quite possibly show no indication of its presence which can be detected with the microscope. That some forms of degeneration may predispose to hæmorrhage seems pretty clear from the occurrence of the latter spontaneously in diseases of so degenerative a type as general paralysis and locomotor ataxy, and, perhaps, the case of M. Klippel might also be placed in the same category, while the liability to severe hæmorrhage from traumata, which is so

common in insanity, certainly seems to indicate the same. My view, then, of this case would be, that the hæmorrhage was due to active and passive hyperæmia, in combination with some degenerative process in the vessels; whilst Dr. Savage's case, so far as it was not due to slight traumata, would be caused by vascular disease and the vascular dilatation of excitement.

In conclusion, I have to thank Dr. Clouston for permitting me to publish the case, and several of the assistants at Morningside, past and present, for various details concerning it.

THREE CASES OF FRIEDREICH'S DISEASE (HEREDITARY ATAXY) ASSOCIATED WITH GENETOUS IDIOCY.

By M. J. NOLAN, L.R.C.P., L.R.C.S.;

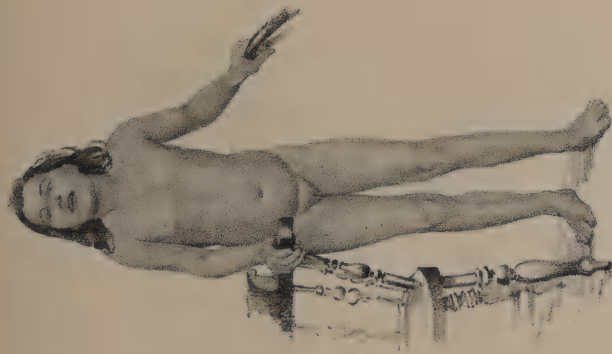
Resident Medical Superintendent, Down District Lunatic Asylum,
Downpatrick.

[Read in the Section of Medicine, Friday, March 22, 1895.]

I HAVE the honour to introduce to the notice of the Academy three cases of Friedreich's disease (hereditary ataxy) associated with genetous idiocy of the cretinoid type, which have been under my observation. They are, I believe, the first of the kind that have been brought before the medical societies in this country. Apart from that consideration, however, and from the fact that they admirably illustrate the symptoms of a disease of which but some one hundred genuine cases are on record, they are of special interest in their co-existence with such aggravated mental deficiency—in this latter respect they would, as far as our present knowledge of the disorder goes, appear to be unique.

To avoid the possibility of confusion it may be desirable to state, at the outset, that the cases under notice are regarded as examples of that special form of ataxy originally described by Friedreich in 1861, and which for twenty years later was variously described as "hereditary," "familial," and "generic" ataxy.

Each new title proved unsatisfactory, and at length, in 1882, Brousse (1) gave it the name of its original observer, and from that date it has been almost universally identified as "Friedreich's Disease." But, as will be seen, the cases now noted, though without doubt belonging to Friedreich's special ataxy, at the same time possess points of resemblance with Sanger-Brown's (2) late hereditary ataxy, Pierre Marie's (3) cerebellar heredo-ataxy, and Déjerine and Scottar's (4)



Case I.
E.M. L.
aged 22.



Case II.
R.M. L.
aged 15.



Case III.
T.M. L.
aged 10.

DR M.J. NOLAN ON FRIEDREICH'S DISEASE (Hereditary Ataxy) ASSOCIATED WITH GENETOUS IDIOCY.

heredo-ataxy of peripheral origin. From all such sub-types they are definitely removed by symptoms so pronounced that there is no need to discuss the differential diagnosis; nor can they be mistaken for chorea, tabes, disseminated sclerosis, or family cerebral diplegia, all of which may be confounded with some of the less typical cases of Friedreich's disease.

Family History.—The father (aged forty-nine) of the three patients has been a chronic drunkard from youth. With the exception of gastric and hepatic ailments, the result of alcoholic excess, he has enjoyed good health, has no history of syphilis or of any of the neuroses. His father died of senile phthisis; his mother, at a ripe age, of gangrene.

The patients' mother is a hardy woman, who never had a serious illness. With the exception of her eighth and last confinement (when Thomas, one of the subjects of this communication, was delivered by instruments), she has had normal, easy labours. Her father died in middle age of "lung disease" (phthisis?), her mother in advanced life of "disease of the back of her brain." Apart from this vague history of cerebellar (?) disease, there is no record of any cerebro-spinal paralysis; nor can any history be discovered of chorea, epilepsy, or insanity. Her knee-jerks are normal.

The parents had a family of eight children, viz :—

1. Sarah, aged twenty-seven. Perfect health. Very intelligent.
2. David, aged twenty-three. Excellent health. Intelligent.
3. Elizabeth, aged twenty-two. Ataxic. Idiotic.
4. Thomas (I), aged eleven. Died of scarlatina. Previously healthy.
5. Robert, aged fifteen. Ataxic. Idiotic.
6. Ellen, aged five. Died of scarlatina. Previously healthy.
7. Susan, aged twelve. Healthy. Intelligent.
8. Thomas (II.), aged ten. Ataxic. Idiotic.

All were reared at the breast for an average period of one year and nine months. The mother attributes the condition of her three ataxic children "to her husband's constant drinking fits, and frights in consequence," and, like the widow Suss, mother of some of Friedreich's patients, she believed they were "conceived during drunkenness," but she has to confess that the same conditions were in operation during all her pregnancies. No child suffered from eclampsia during childhood, nor in the case of the patients was the ataxy heralded by monoplegia, hemiplegia, or other prodromal symptoms of an acute nervous character. In each case she observed the disease soon after birth, and noted with increasing age the progressive inco-ordination attacking successively the legs, arms, and heads, and lastly the eyes, and the speech mechanism. Noting again the taint of alcoholism, brain disease, and tubercle in their family history, I pass on to review briefly the symptoms of the individual patients.

CASE I.—Elizabeth M'L., aged twenty-two, the senior patient, and third born of the family, was admitted to the Down Asylum on the 13th of December, 1894, charged as a "dangerous idiot." The warrant stated that "she did wound and violently assault her brother Thomas, by tearing him and attempting to throw him into the fire." The girl is 4 feet 7 inches in height, and weighs about 7 stones.

Figure.—Stunted, inclined to left side, owing to spinal curvature.

Expression.—When in repose the features are rather of the Malayian idiotic class; in animation expressive of good humour.

Eyes.—Lids heavy, and slow in action. Vision seems normal. Low degree of intelligence renders it impossible to test accurately the colour sense or the limitation of the visual field. Slight internal convergent strabismus without diplopia. Pupillary reflexes normal. Inability to sustain prolonged co-ordinated movement of eyeball. Slight horizontal "static nystagmus" (Friedreich's) always present. Well-marked "ataxic nystagmus" (Friedreich's) elicited on steady fixation, and characterised by oscillation rising and declining in frequency in a Cheyne-Stokes fashion.

Hearing, taste, and smell normal.

Speech.—Prolonged fibrillary contractions of the facial muscles precede articulation. Marked lack of control over lingual and lip muscles. Words ejected in a laboured, jerky style; many are mutilated, and pronunciation is very imperfect. Example:—

“Hock ob ages, lebt fuh me,
Let meh hi my sin in theh.”

Thyroid gland.—Uniformly enlarged in a moderate degree. No tendency to exophthalmos or cardiac overaction.

Sensation.—Tactile sensibility intact. There is, however, a universal partial analgesia of varying intensity, most marked over the limbs, less so over the trunk. No complaint of any subjective sensations, lightning pains, or visceral crises.

Spine.—Marked tenderness over the mid-dorsal vertebræ. Scoliosis in upper dorsal and the dorso-lumbar regions. The convexity to the right above and left below, and combined with lumbar lordosis.

Sexual development.—Very retarded. Breasts rudimentary; absence of pubic hair; immature conformation of external genitalia. Menstruation not established. Complete want of self-consciousness.

Arms.—Subject to “ataxy of quiet action” (Friedreich) or inability to keep still. Want of co-ordination when special action is attempted.

Hands.—Considerable difficulty experienced in the performance of premeditated acts, such as threading a needle, picking up a pin, hooking or unhooking her dress; intermittent atheroid movements when lying in lap; hovering “bird-of-prey” action when seizing an object. Exertion rapidly tires. Wasting of thenar and interosseal muscles, with tendency to cupping of the palm and flexion of the fingers, giving the suggestion of the *main en griffe*.

The Feet.—Fairly formed; rather “stumpy,” with tendency to antero-posterior shortening, but no retraction of great toe. Slight degree of drop-ankle, owing to paresis of leg muscles.

Gait.—Much difficulty in assuming the erect position, which cannot be maintained unaided. In progression, which is slow, the legs are kept wide apart, heavy unequal steps are taken, the feet hover to the ground, the inner aspect of sole first striking it from heel to great toe, and then flapping outwards. They are raised but little from the floor, and seem as if restrained by some adhesive substance from withdrawing rapidly. The course described is rather zig-zag in outline. Every visible muscle of the body is brought into play to preserve the equilibrium; the head and body

bent forward, and the hands extended laterally, ready to break the ever imminent fall. Turning is almost impossible without aid; and closure of the eyes (Romberg's symptom) increases all difficulties tenfold by aggravating the "static ataxy."

Knee-jerk totally abolished.

Trophic lesions confined to vaso-motor disturbances—lividity and coldness of feet.

Negative symptoms.—Integrity of the sphincters; absence of visceral crises; the integrity of special sense organs; and cutaneous sensation. Electrical reactions normal.

CASE II.—Robert M'L., aged fifteen years (the fifth born child), was admitted to the asylum on same day as his sister (13th Dec., 1894). He was also committed as a "dangerous idiot," the warrant stating that he "did attempt and endeavour to violently assault his mother with a butcher's hammer." He is 5 feet $2\frac{1}{2}$ inches high.

Figure is fairly proportioned, and, when supported, shows no tendency to scoliosis, though the whole body depends forward on the pelvis.

Expression also Malayan in type, but of a brighter cast than that of his sister. Very easily excited to smiles and laughter.

Eyes.—Lids act in normal accompaniment to movement of the eyeballs. Vision normal; visual field and colour sense cannot be accurately gauged owing to mental condition. Slight internal convergent strabismus, without diplopia. Reaction of pupils to light, and sympathetic reflexes normal. Accommodation normal. Co-ordinated movement fails to be sustained after a brief period. "Static nystagmus" always present in a slight degree, and is readily converted into "ataxic nystagmus" by fixation of attention on any object; the oscillations in the horizontal line less defined in rhythm than in the same condition in his sister.

Hearing, taste, and smell normal.

Speech is ushered in by rapid fibrillary contractions of the oral, lingual, and facial muscles. Articulation is spasmodic and "scanned," phonation discordant, and language imperfect. Examples:—

- (a) "Wass me in bud o' deh Lamb,
I tal be witer dan tow."
- (b) "Fall we gayeh at deb riber,
Wer wit ayndels' feet have teed."

The palate is too highly arched; and the soft palate, uvula, and fauces are flabby.

Thyroid gland.—Bilaterally very much increased. No exophthalmos, but throbbing of great vessels at roof of neck and hæmic bruit over the tumour. Rapid flushing and paling of face. Paroxysmal sweating of head and feet.

Sensation.—No anæsthesia or subjective phenomena. Partial analgesia of varying degree is distributed almost over the entire body, but is much more marked in the extremities than on the trunk, and less on the anterior than the posterior aspect.

Spine.—No tenderness over spinous processes. No tendency to scoliosis or lordosis.

Sexual development.—Physically rather in excess of his age; but no evidence of sexual power, excitement, or desire has been observed, though the penis and testicles are abnormally large. Neither has he exhibited any self-consciousness during repeated examinations.

Arms.—The “ataxy of quiet action” is very evident, and the want of co-ordination during voluntary movement is more aggravated than in the other case. He is unable, when his arm is extended, to bring his forefinger accurately to the tip of his nose; he “dabs” it on the bridge or at the inner canthus of the eye. Carries a glass of water with difficulty to his mouth, but at length succeeds; the jerky movements not affecting the direct line of action of the limb as in chorea.

Hands, in this case also, are subject to atrophy of groups of the intrinsic muscles, and exhibit the atheroid movements of the fingers when lying unused, and the “claw-like” configuration when about to pick up an object. Efforts to button or unbutton his clothes or perform other more delicate acts are fumbling and uncertain, and quickly induce fatigue.

Feet.—Free from deformity (no tendency to club-foot), but shows marked ankle-drop.

Gait.—The ataxy is so great that no voluntary effort is made to leave his seat. When required to move it is necessary to assist him into the erect position, which he cannot maintain without support. Progression is most difficult. The legs are wide apart—the feet hover to the floor, from which they are raised laboriously. The limbs are carried from side to side by the overhanging trunk, the extended hands grasp for aid, the spine is arched forward, and the head is thrown back. Rapid rotary movement is impossible—slow turning is most difficult. Closure of the eyes so much increases all difficulties that patient would speedily fall if unsupported.

Knee-jerk present and exaggerated. Slight ankle clonus. Trophic

lesions, confined to vaso-motor disturbances—the blushing and paling of face, and the intermittent hyperidrosis of face, head, and feet.

Negative symptoms.—In addition to the integrity of the sphincters, and absence of fulminating and girdle pains, we note freedom from ocular and visceral troubles. Electric reactions normal.

CASE III.—T. M'L., aged ten, eighth and youngest child. Was not a patient in the asylum, but was brought to me for examination.

Figure.—Rather small, but duly proportioned.

Expression.—Identical with that of his brother, whom he most strikingly resembles in every particular.

Eyes.—Vision normal. Strabismus, internal and convergent. “Static” and “ataxic nystagmus” in the horizontal axis, with undulating rhythm. Some inability to sustain associated movements.

Hearing, taste, and smell normal.

Speech.—Is more rudimentary than in two previous cases; vocabulary is more restricted, and the ataxy is not confined to the lingual, oral, and facial muscles, but even more markedly affects the intrinsic muscles of the larynx and vocal chords, efforts at phonation resulting in a shrill sibilant tenor or gurgling bass note. The hard palate is over-arched, and the muscles of the soft palate are flabby and ataxic.

The thyroid gland seems to be of normal size.

Sensation.—Tactile sensibility and the sense of pain are normal.

Spinal column.—No tenderness on pressure, muscles flabby and weak, curvature but a matter of time.

Sexual development.—Physically nothing abnormal.

Arms.—Action very ataxic. The tests applied (accomplished with effort in the case of his brother and sister), he is unable to attempt with any degree of success.

Hands.—Very restless. Wasting more advanced, and attitude more suggestive of the *main en griffe*.

Feet.—No special deformity.

Gait.—Ataxy very advanced—cannot advance more than a step or two unaided. Cannot turn. Closure of the eyes causes him to fall forward over his legs, which are stretched as wide as possible apart, in the attempt to gain a basis of support.

Knee-jerk absent. No ankle clonus.

Trophic lesions.—None manifest.

Negative symptoms.—Freedom from ocular and sensory troubles. Integrity of sphincters, absence of lightning pains or visceral crises.

Observations.—I much regret I am unable, for obvious reasons, to bring the subjects before this meeting, as a brief personal observation would enable those present to satisfy themselves as to the striking and characteristic nature of the symptoms which I have endeavoured to faithfully depict, but of which any verbal description must necessarily be bald and imperfect. I am able, however, to put before you some photographs of the patients, which show some of the salient features very clearly. In those of the girl one observes the inability to remain erect unsupported, the lateral curvature and lordosis, the stunted contour of the figure, the expression of good-humoured idiocy, the absence of the external evidences of sexual development, the tendency to drop-ankle, and the goître.

In those of the boys the same helplessness, the facial expression, the abnormally large size of the genitalia, and the tendency to drop-ankle are well portrayed; and in one of the pictures the blurred and distorted outline of the head and limbs indicates the “jerky movements” and “ataxy of quiet action,” the presence of which rendered the reproduction of the other conditions no easy task. Add to the characters thus shown the “static ataxy,” the “static” and “ataxic nystagmus,” the peculiar laboured “scanned” speech, the steady progressive paresis gradually invading all the members from below upwards, the wasting and paresis of the hand muscles, and one finds the complete syndrome which embraces the aggregate elements that go to produce the special type of ataxy first isolated and described by Friedreich. The symptoms are common to all three cases now recorded, and bear out M. Soca’s (5) law that the disease commences at the same age in members of the same family; but it is worthy of note that though in all three the disease started with infancy, yet at this time the bodily and mental infirmities are in inverse ratio to the ages of the sufferers—the

youngest is most, the oldest is least advanced, the intermediate patient being affected in a medium degree.

I have preferred to describe these cases under the title of "Friedreich's Disease" rather than under its synonyms "Hereditary Ataxy," "Family Ataxy," or "Generic Ataxy," since observation has determined that the type which Friedreich established as a distinct pathological entity is not necessarily, indeed rarely is, "hereditary," nor, as some nine recorded isolated cases prove, is it confined to a "family" or "generic" character. However objectionable it may be to designate a disease by the name of its discoverer, such a course is less liable to cause error than to give to the disorder as a title the name of one or more non-essential symptoms. The inevitable result of the latter system is the setting up of sub-groups to receive the cases which do not fit in with the nomenclature of the original type, though they really differ from it not in kind but in degree. The existence in one or other of the three cases under notice, of special symptoms which have been laid down by different observers as restricted to the individual groups of cases investigated by them, demonstrates the futility of dogmatically limiting clinical phenomena which depend for their production on varying degrees of developmental errors in the cerebro-spinal system, and which in no way follow the beaten track of disease set up in a once perfectly constituted nervous organisation. Thus, though the three cases so fully embrace the symptomatology of Friedreich's disease, one or other has, as I stated at the opening of my communication, some points of contact with the following important groups, viz:—

1. With Sanger-Brown's and Nonne's "Late Hereditary Ataxy" (of cerebellar origin) in the retention and exaggeration of the knee-jerk and the presence of ankle clonus in the case of Robert, and absence of club-foot in all three cases.

2. With Pierre Marie's "Cerebellar Heredo-Ataxy" in the same particulars.

3. With Déjerine and Scottar's "Heredo-Ataxy" (of peripheral origin) in the mixed character of the symptoms of tabes and Friedreich's disease proper, in the case of Elizabeth.

4. With Klippel and Durante's group in the sensory disturbance (partial analgesia) in each case.

5. With Family Cerebral Diplegia (3) in the marked spasmodic character of the gait and speech in the case of the youngest patient (Thomas).

The clinical affinity thus indicated, of interest in itself, would not seem to be of paramount importance, were the points of contact named not regarded of the highest weight (by the various eminent observers) as essential to the differential diagnosis between their classifications and "Friedreich's" disease. The presence, however, of these symptoms scattered irregularly through this group of cases must very considerably reduce their diagnostic value.

One point of clinical interest of a negative character, the absence of foot deformity, must not be overlooked. No one of the three patients exhibits the club foot, which is erroneously believed by many to be a very essential feature in Friedreich's disease. Though, no doubt, this condition is a usual accompaniment (and naturally so when we consider the frequency of paresis of the antero-lateral muscles of the leg, the contractures coincident to the very advanced stages of the disease, and the very common association of spinal curvature), yet there exists such a variable ætiology of the deformity that its presence cannot be regarded as essential to the recognition of "Friedreich's Disease." More particularly is this true of the early stages. On the other hand, when present, it has appeared very early in some cases. I have noticed the presence of drop-foot which Ladame (5) verified in a case regarded by him as "typical;" and in the

case of the girl a development of the foot deformity is but a matter of time.

Psychical Condition.—The mental state accompanying these three cases is identical, and deserves some attention. Observation and inquiry have failed alike to elicit the slightest confirmation of the alleged violent homicidal outbursts which led to the committal of two of the patients to the asylum. The inference is that the convenient provisions of Act 30 & 31 Vic., c. 118, gave the parents a simple and ready means of relieving themselves of a burden and responsibility; and, no doubt, sooner or later, they will take the same steps in the remaining case. The mental aspect in point of fact conforms very little with that usually associated with idiots of the cretinoid type. Tractability, unvarying good humour, personal cleanliness, and psychical asexuality are their leading features. Though so low in mental endowment, and constrained by physical infirmity to the tedium of a constant sitting posture, they never exhibit in the most remote degree the waywardness, fulminations, filthy habits, and marked sexual depravity so commonly combined with congenital mental deficiency. On the contrary, they are most anxious to please; they are childishly eager for notice, and delighted with any little mark of attention. Neither do they show a mimetic tendency; on one occasion only the girl repeated the curses of another patient, but in a highly amused manner. They seem devoid of disturbing emotions, and possess a continual feeling of well-being, such as characterises certain phases of general paralysis of the insane. There is, however, absence of distinct exaltation, delusion, illusion, or hallucination. Intelligence is very low, volition is rarely manifest, and memory very defective. The morbid condition of the speech has been noted. They never attempt to speak of their own accord, and their replies to queries are difficult to understand, vocabulary being limited, phonation defective,

and articulation imperfect. In the repetition of simple prayers or hymns they require frequent prompting, and their delight in responding is so great that there is no trace of reverence for the religious sentiments. The natural affections seem to be in abeyance. The girl passively holds a large doll, but without the affection of maternal nursing so characteristic of girlhood. The boy is casually observant of the doings of those about him, showing no trace of the normal adolescent desire to take part in all that is going on, nor can he be taught to master the simplest game. To sum up, we find a physical condition restricted to a fixity of location almost vegetable, combined with a hybrid-psychical condition comprising the negative aspect of idiocy, and the active exuberant sense of well-being of expansive delirium. Finally, this atypical idiotic mental state is co-existent with a very definite form of ataxy.

Genetous idiocy has been found combined with locomotor ataxy (6), infantile spinal paralysis (7), anterior poliomyelitis porencephalus (7), and pseudo-hypertrophic paralysis (6 and 7), but I can discover no instances, except the cases now noted, of genetous idiocy in the victims of Friedreich's disease. The psychical conditions noted by authors in the latter disease have been but lightly touched on, yet the observations made show the various degrees of intelligence to be found in association with it, and prove the truth of Gower's (8) remark that no mental change can be regarded as part of the disease. There is certainly no unvarying arrest of intelligence corresponding to the arrest of development in the nerve structures; and Ladame (5) looks for anomalies of temperament—irritability, apathy, indolence, causticity—rather than for arrested mental development. M'Kenzie (9) states that in many cases there has been high development of brain power; one was a brilliant graduate of a university. Several have been noted for exhibiting a ten-

dency to unprovoked outbursts of laughter. Pepper (10) says there is little tendency to involve the hemispheres—and that distinct aberration is very uncommon.

The cases now reported indicate that the psychical condition to be found with Friedreich's disease is not as restricted to anomalies of temperament as the foregoing observations would lead one to suppose. In them there is an entire absence of apathy, indolence, and violence, with a very low state of mental development, so low that there must be, of necessity, a pathological basis in the hemispheres.

Pathology.—A few words of a suggestive character on a point still debated. Having reviewed the opinions of various authorities, a recent writer observes—"What is needed is microscopic examination of spinal cords taken from members of strongly-affected families who have not themselves manifested the disease." One admires the scientific spirit of this observation, but feels that if the solution of the problem depends on such lines of inquiry it may remain very long unsolved. In the meantime we may accept the statement of Ladame (5)—who has crystallised, after careful analysis, all that is known on the matter—that the clinical symptomatology of Friedreich's disease is due to "a combined primary system—sclerosis of the spinal cord, in which several systems of fibres have been affected from birth or during infancy with an arrest of development (posterior columns, pyramidal, and direct cerebellar tracts), and degenerate before having attained their full growth." With this we have Gowers' (8) assertion that "the ultimate cause is a congenital tendency of development by which the affected elements have a briefer period of vital endurance than the other tissues of the organism." He holds, however, and in this he is in opposition to Möbius, Kahler, and Pick (10), that though there is a congenital tendency to an ephemeral existence in certain nerve structures, yet "their development suffices for perfect

function during the early part of life and that their functional capacity undergoes subsequent failure which can only be due to a process of structural change." Now the three cases under review go rather to support Möbius, since at no period of extra-uterine life did the development of the structures "suffice for perfect function." The morbid condition came into evidence with life itself. Again, as pointed out by Ormerod (11), Friedreich's disease is often brought to light after acute disease, particularly in early childhood, thus showing in those attacked a pre-existing receptivity of an organic nature in the nervous system. Hammond (12) and Senator (13) held that the defect was primarily in the cerebellum, involving the cord by extension; but recent researches have disproved this opinion. Very recently, in a case of exceptional interest, elaborately investigated by Dr. Michell Clarke (14), Friedreich's disease was complicated towards the end by a sarcomatous tumour of the cerebellum, but though the lesions in the cord were extensive and characteristic, yet the cortex of the cerebellum was found healthy and in every respect normally constituted, with the exception of the presence of the new growth. Ausher has noted embryonic nerve tubes in the peripheral nerve tubes. The posterior nerve roots were found involved by Griffith. Déjerine and Lutelle (15) regard the defect as a neurogliar (ectodermal) sclerosis affecting the posterior columns chiefly. All investigations point to the developmental error as a gliosis of varying degree and uncertain distribution, sometimes clinically evident from birth, more frequently unveiled only by the ravages of intercurrent acute disease, or the stress of puberty or adolescence.

Going a step further, if we consider in this connection the morbid anatomical basis of idiocy, which in so many instances depends on a condition of cerebral sclerosis (an undue increase of the neuroglia, a slightly altered embryonal tissue), we may

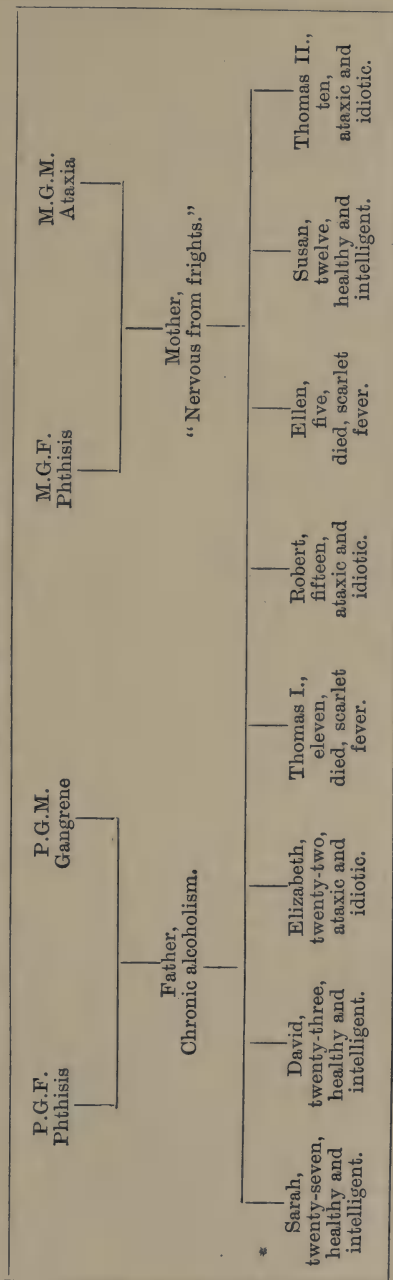
not be very hazardous in assuming that the possible explanation of the physical and mental conditions of the cases now before us is a gliomatosis of cerebro-spinal distribution.

Note.—Since the above was written Dr. Guthrie brought a case of “Early Friedreich’s Disease” before the Medical Society of London (April 8th, 1895). The patient exhibited ataxic gait, slight inco-ordination of the hands, and complete absence of knee-jerks. Dr. Ormerod pointed out that in the absence of *speech affection, nystagmus, and family proclivity*, described by Friedreich as characteristic of the disease (*and present in the three cases now recorded*), Dr. Guthrie’s case was rather doubtful as to its claim to be classed as “Friedreich’s Disease.”—M. J. N.

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GENEALOGICAL TABLE of Family Affected with *Friedreich's Disease*.



NOTE ON A CASE OF TYPHOID FEVER WITH PROLONGED PYREXIA.*

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[Read in the Section of Medicine, March 22, 1895.]

ON Monday, 13th November, 1893, I was asked to see Mr. X. Z., aged twenty-two, a solicitor's apprentice, then in town attending law lectures at the Four Courts. I heard from him that he had been ailing a little over a week. On Sunday, 5th November, he had felt heavy and stupid, and not able for more than a short walk. The following day he was chilly except when sitting by the fire, and on Tuesday so poorly that he remained in bed. His temperature on that day, taken by a medical student, was 101° . For the remaining days of the week he was troubled chiefly with headache, pains in the small of the back, and slight bleeding from the nose. He did not vomit, and the bowels moved twice after a dose of oil, the motions being dark coloured. I further learned from him that, except what a doctor called an attack of "congestion of the liver," he had always been in excellent health, and had taken no inconsiderable share in athletic exercises during his undergraduate course in Trinity College.

On examination I found him rather feverish, sweating, and anxious about himself. The tongue was dry, and he complained of not sleeping well. Physical examination of the thorax was negative, but over the abdomen there were a few suspicious spots. However, I could not satisfy myself that the spleen was enlarged, and I detected neither gurgling nor tenderness in the right iliac fossa. At 10 p.m. that evening he was inclined to sleep. His pulse was 78 and temperature 100° F.

On Tuesday, 14th November, some spots were noticed on his back, but there was still no distinct enlargement of the spleen, and no tenderness on percussion over the abdomen. A motion which I examined was greyish colour and almost quite fluid. I had now little doubt that my patient was suffering from an attack of typhoid fever, and the following day I obtained the services of two nurses.

* For Temperature Chart see p. 90.

The next five days everything looked very satisfactory; the temperature ranged between 100° and 102° , and the pulse remained, as indeed it so often does in typhoid, quiet, varying from 76 to 90 per minute. As we were now on to the seventeenth day of his illness, I was hopeful that we were dealing with only a mild and short attack of typhoid fever—a hope which was not realised.

On the evening of the 21st November he complained of pain in the fifth and sixth intercostal spaces on the right side; his respirations increased considerably in frequency, and on auscultation there was a suspicion of friction. By the following day there was modified dulness on percussion over the right side behind when contrasted with the left, and over this area the breath sounds were rather deficient. The respirations were still frequent, but the pain was relieved by poulticing. The urine contained no albumen, and the chlorides were present in apparently normal amount.

November 23rd.—The *alæ nasi* were working vigorously, and the respirations reached 48. The temperature, which had been rising for the last four days, was now 104.6° , and the expectoration became almost prune juice in character. An examination of the urine now showed the almost complete absence of chlorides. The patient had, therefore, a severe attack of croupous pneumonia of the lower lobe of the right lung, occurring at the end of the third week of typhoid fever. During the succeeding days he suffered from pain in his side, relieved by poulticing and stuping, but slept fairly well, and took liquid nourishment freely.

November 28th.—It was noted that there was deficient resonance on percussion, and on auscultation there was bronchial respiration and increased vocal resonance over the lower part of the right lung. The temperature, in the course of a few days, as the accompanying chart shows, gradually diminished, the pulse fell again to 90, and the respirations to 30. The chlorides were again abundant in the urine on 9th December, but except for the more abundant crepitation there was little alteration in the pulmonary physical signs.

The afternoon temperature for the first time was subnormal on 19th December, and three days later he passed a large solid motion.

On the 23rd December, some weeks after the commencement of his illness, during which period he had been allowed only liquids, he was given leave to take a very small fragment of bread without any crust, and on the 24th December he had a cup of tea, and later in the day a little bread and milk.

December 25th.—Sat up in bed for twenty minutes, and again

in the afternoon for quarter of an hour. As an additional luxury he had a smoke—the first for fifty days.

December 26th.—Allowed a custard with one egg.

December 28th.—A little corn flour with one egg in the afternoon, and a little bread and butter with his tea; at this stage a day's dietary was as follows:—

8 a.m.—Tea with a little bread and butter.

11 a.m.—Custard with one egg.

2 30 p.m.—Corn flour with one egg.

6 p.m.—Tea and a little bread and butter.

During the intervals between the above hours he took some milk or beef-tea.

December 30th.—Sat up in arm-chair for half an hour, and allowed a little fish for dinner.

January 3rd, 1894.—Sat up for two hours. Had chicken for dinner. His appetite and strength improved for the next few days, and everything seemed to be going on well, till the 8th January, when the temperature at 1 p.m. was 100°. I therefore stopped, for a few days, the chicken and the small quantity of butter he had been using daily for the past fortnight. The improvement was not, however, maintained, and the evening temperature continuing to keep up he was again confined to bed for the entire day, and the quantity of solid food he was taking was still further restricted. His diet for each day about the latter end of January was—

9 a.m.—Two cups of tea made with a large proportion of milk.

11 a.m.—Corn flour and milk.

1 15 p.m.—Beef-tea and a little bread.

5 p.m.—Beef-tea again, about 6 ounces.

7 p.m.—About six ounces of milk.

8 30 p.m.—Milk and a little corn flour.

During this period he slept well, his appetite was good, the bowels were moved every second day by a plain soap and water injection, but the temperature still kept irregular, rising one or two degrees above normal each evening. Most careful examination of the abdomen yielded no explanation for this. In the chest the pneumonia had cleared, and the patient had no cough. All the excretions were also examined with negative results. This unaccountable evening pyrexia, slight though it was, suggested the possibility of there being some hidden tubercular mischief—a supposition which was strengthened by the fact that some very

near relatives had died of phthisis. The lungs were again examined, and, though I could detect nothing definite, there seemed to me to be a very slight difference between the auscultatory and percussion phenomena over the apices. On 5th February Dr. Purser kindly saw the patient in consultation with me, and after prolonged examination failed to detect anything to account for the unstability of the temperature. He agreed with me as to the possibility of there being some concealed tubercular focus, but felt that till there were more evident signs of this than any then existing there was good reason for hope that eventually the temperature would come all right. He recommended that the quantity of beef-tea be diminished, and that the patient be again put on solid food. On 10th February I examined the fundus oculi, but there was not the slightest indication of any tubercles—in fact, each eye seemed normal in every respect. The evening pyrexia not abating under the alteration in diet, it was decided to try the effect of quinine, and on the 16th February, and for several weeks following, with occasional intermissions, he took ten grains of quinine daily, generally administered about noon. This did not exert any very marked influence on the temperature, but, judging from the days on which it was not administered, probably the record was one degree lower than it otherwise would have been.

About this time the patient was moved to one of the suburbs, but this change was not attended either by any distinct improvement.

Notwithstanding the irregular pyrexia, the quantity of solid food he was taking was being gradually increased, and on 5th March his dietary was—

Breakfast, 9 a.m.—Tea, toast, one egg, butter and marmalade.

Dinner, 1 10 p.m.—Fowl, potato, half a glass of porter, corn flour, cream, and calf's-foot jelly.

Tea, 5 10 p.m.—Tea, bread and butter.

7 30 p.m.—Egg and milk.

9 p.m.—A little porridge and cream.

Now, as in fact throughout the greater part of his illness, the patient slept very well. As a rule he took his food with relish, and was sufficiently strong to sit up for two or three hours daily. Still the evening temperature in the axilla varied from $99\cdot6^{\circ}$ to $100\cdot2^{\circ}$, and the patient was not making much headway.

Towards the middle of March it was thought that a change home to the north of Ireland might be advantageous. As I could detect nothing more than on former occasions to account for his evening

temperature, I was anxious that Dr. Purser should again see him. On examination, on the 14th March, he was satisfied that the slight differences between the pulmonary apices were within normal limits, and consequently felt confirmed in the view he had previously expressed. The journey to the north was borne very well on the 16th March, and records of his condition were forwarded regularly to me.

The change home made no difference apparently in the amount of the fever. On the 12th April it was thought sufficiently mild to allow him out for a short time in the garden, but he was not at all so well a fortnight later. Towards the end of May he was out for a drive of half an hour's duration, and in July he was able to walk up the stairs. Early in August he was moved to Portrush, and commenced to improve rapidly. His temperature soon became normal, his strength steadily increased, and on 10th September—the 299th day of his illness—the temperature having been normal for three weeks, his sister wrote—"I enclose you my brother's last chart. I am certainly glad to see the last of it."

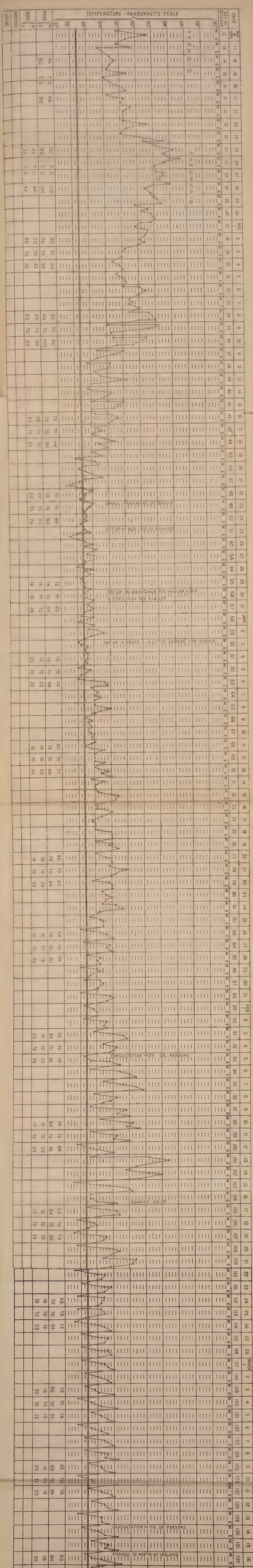
Once turned the corner his progress was rapid, and by the end of October he was sufficiently well to return to town and resume his professional work. He was able, he said, to walk six miles. He had no cough; his appetite was excellent.

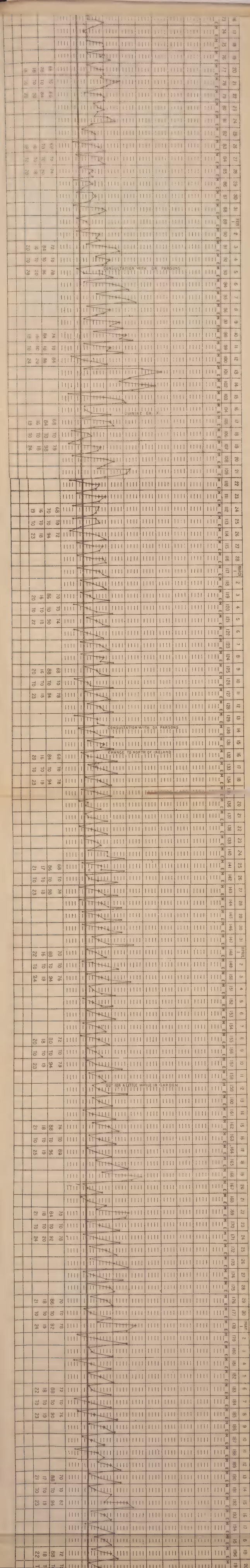
February 5th, 1895.—He again consulted me on account of some pain in his left side. I availed myself of this opportunity to make a careful examination of his chest, but with an absolute negative result. There was nothing in the apices, nor even the slightest indication of a pleural friction sound where the pain was. The latter I was forced to look upon as muscular in origin, and a little anodyne liniment soon relieved it. He had no cough whatever, and his weight was now 12st. 7lbs.

February 14th, 1895.—He walked to Lucan and two miles of the way back.

July 13th, 1895.—Called to see me. He is now in the most robust physical health, and never felt better.

The most remarkable feature in the case was the prolonged pyrexia. The earlier part of the chart is sufficiently explained by an attack of typhoid fever, complicated by croupous pneumonia such as the patient had. On the 45th day of his illness (19th December) the temperature became normal, and





it seemed that we had reached the end of the lysis and that convalescence had commenced. With very slight exceptions the temperature remained constant till the 8th January, when at 1 p.m. it reached 100°. It was thought that the increase in the patient's diet, though made very gradually, might be responsible for this elevation, and solids were at once diminished and an almost liquid dietary resumed. This alteration not having the slightest beneficial influence on the temperature, and careful examination failing to disclose any distinct contra-indication to solid food, it was decided to feed him more generously, but likewise with a negative result. Free administration of quinine, removal to suburbs, and even a change to his home in the north of Ireland failed in their turn to keep the temperature within normal limits. Finally, about the 277th day of his illness, just as obscurely and unaccountably as the pyrexia set in, it subsided, and during the last three weeks for which the temperature was recorded, it was always normal. The change to Portrush, though it hastened his convalescence, can hardly, I think, be looked upon as the cause of the disappearance of the fever, as a reference to the chart discloses a tendency towards subsidence before his removal to the sea-side.

At no time was the fever high, but its persistence, without any discoverable cause, produced some anxiety. Repeated physical examination failed to detect any organic lesion, but some abnormal process must have been at work, as, although the patient took his food regularly and slept well, there was remarkably little improvement in his appearance or strength from January till August, when his temperature became normal.

In the absence of any detectable lesion one is left to the imagination, guided and controlled by experience, to suggest more or less plausible hypotheses in explanation of the prolonged course of this case. When the temperature, having

been practically normal for almost a fortnight, in the first week of January again rose, the most probable supposition which then suggested itself to my mind was that the patient had a slight relapse, and I hoped that on diminishing his solid food the fever would disappear. This idea being negatived by the persistence of the exacerbations, the family history, combined with the remittent type of the fever, pointed to the probability of tubercular mischief. The absence of cough, expectoration, and glandular enlargement afforded at the time reason for hope that this was not the case, which the further course of the disease and the very robust health of the patient at present compel us now to seek some other theory. A focus of suppuration might produce such a temperature chart, but there was at no time any discharge of pus, and rigors, profuse sweating, and emaciation were entirely absent.

The literature of typhoid fever, so far as I have been able to consult it, gives no assistance towards the solution of the problem. Murchison describes one case lasting 75 days as "remarkable for long duration." Even admitting that the heat centre is in a condition of unstable equilibrium after a prolonged specific fever, we do not make much advance towards the elucidation of the pyrexia, and it must be borne in mind that during those six months there was very little headway towards convalescence made. It seems much more probable that the temperature and the slow rate of progress were the result of some one abnormal process, than that a mere instability of the heat centre was the cause of the exceedingly slow gain in strength and energy during this period.

But while the solution of this enigma cannot yet be arrived at, the history of the case should prevent us from fixing any limit to the possible duration of an attack of typhoid fever, and its favourable termination may lead us

to trust more firmly in the recuperative powers of nature under circumstances such as those detailed above.

DR. PURSER thought that Dr. Parsons' case differed materially from Dr. Falkiner's. In the latter there were several complications, and the case was that of a young child in which the temperature was much more easily put up. Dr. Parsons' case seemed to have been uncomplicated except for a short attack of pneumonia at the beginning. He thought persons were apt to put too much weight on the single symptom of the temperature. He thought that the explanation of the case was that the nervous mechanism by which the temperature was maintained normal, called the thermotaxic mechanism, was enfeebled, and that the person became for a certain time a poikilothermic animal, which young children always are. During a fever the temperature not only is higher but also more unstable, and even after the temperature comes down to normal it is unstable for a long time, very little causing a rise or fall. So that unless the temperature was accompanied by other symptoms, there was not much ground for alarm. It was interesting to note that the condition which produces an elevation of temperature to 100° in some cases makes the person very ill, while in others it does not. Some time ago he had seen a paper on "Septic and Aseptic Fevers." The writer thought that in some cases the temperature was produced by septic causes, and in other cases by aseptic causes. If the patient's sensations were undisturbed and no physical signs could be found to account for the temperature, then there is not much cause for anxiety.

DR. BOYD was disposed to agree with Dr. Purser about Dr. Falkiner's case, that the complications would account for the time that the temperature remained elevated. In Dr. Parsons' case he thought the typhoid fever ended about January, and that the further rise of temperature was due to ulceration, possibly of a mesenteric gland. He thought that ulceration often went on in typhoid after the temperature had come down. He had a case in which the temperature was normal after ten days. The patient then took too much fruit, got peritonitis and died. On *Post mortem* examination more than a dozen ulcers were found in the ileum, which had evidently existed from the typhoid attack.

THE PRESIDENT thought Dr. Parsons' chart the longest on record,

and that there was no doubt about the diagnosis from the full account given. Dr. Parsons had mentioned that he had given quinine without its lowering the temperature. That was his experience also. He had once given 240 grains of quinine in 24 hours, with the result that the temperature only came down two degrees. He thought that a high temperature was of great value in putting persons on their guard and keeping the patient under observation, but in enteric fever he considered the mere range of temperature unimportant as compared with the aspect of the patient, the condition of his digestive system, and the state of his tongue. He had several times, when the patient was feeling well and had a clean tongue, allowed the patient up, although the evening temperature was 100° or 101° , and had found that the temperature had settled down within 48 hours.

DR. PARSONS, replying, said that according to Murchison 100 days was the longest chart of typhoid fever. He did not see how instability of the thermotaxic centre could explain everything, as there was evidently something wrong with the patient besides his temperature. It was only on July 20th that he was able to walk upstairs. He did not think the cause of the temperature was a suppurating mesenteric gland, as it probably would have burst into his peritoneal cavity and produced peritonitis, which he never had.

SECTION OF SURGERY.

SOME THOUGHTS ON THE METHOD OF RELIEVING AN OBSTRUCTED BOWEL.

By SIR THORNLEY STOKER,

President of the Royal College of Surgeons in Ireland; Surgeon to
the Richmond Hospital.

It is the privilege of the President of this Section to address the members at its opening meeting on some matter of surgical interest, and it is an occasion when one may fairly be excused if he selects a topic to which he can apply his experience, rather than one of the novel and obscure subjects in which the theorist delights to revel, and which capture the intellect rather than deal with every-day incidents of our surgical life.

I do not intend to go far afield for material, because it seems to me that the importance of facts is to be measured by their commonness, and that just as the dignity of labour overshadows the greatness of kings, so the most frequent incidents of our surgical life throw the curiosities and rarities of our science into the shade. Common surgery means universal surgery, and implies that which may be cultivated to the greatest good of the greatest number. What Tennyson has called "the falsehood of extremes" is one that creeps very insidiously into the daily life of the enterprising surgeon. There is a tendency to argue from extreme or rare and individual cases, and to lose sight of broad and collective issues.

How often we see elaborate and able papers written with a view to deduce a theory or a practice from a particular and eccentric instance, and the paucity of material concealed by an overshadowing cloud of science condensed from the literature of half a dozen modern languages. This "paper-making" or encyclopædic style is destructive to a fine cultivation of our science, but is a less evil than that which it conceals—the undue craving after originality. Every second surgeon wants his name connected with an operation or an instrument, and in this age of hot and unwholesome competition the hunger is disastrous to the quiet and perfect digestion of abundant material which waits on normal appetite.

As far as my sight reaches I can see no direction in which the craving for novelty and originality has caused men to overstep themselves more than in the operations undertaken so often and with such a light heart for the relief of some forms of obstruction of the bowel. The hateful expression that "there is practically no danger in opening the peritoneum" is ever before the reader in these days, and, as regards a class of cases I wish to speak of, a more false or poisonous teaching was never promulgated.

It is more than five years since I read before this Section of the Academy a paper "On the Treatment of Acute Intestinal Obstruction due to Collections within the Lumen of the Bowel," and I am here now to repeat with every force I can, and with what added weight time, experience, and the position I now hold may give to my words, the doctrines I then enunciated.

Do not let anyone misunderstand me. Although I hold that we live in a time when there is too free a resort to operation in general, and although we may look for a subsidence of the wave and a return to a normal level—yet I have no cry to raise against the general advance of

the operative treatment of the bowel; that would be foolish as well as futile. I have no word to say now against laparotomy in any class of cases save one, and even in that class I make no wholesale condemnation, but only urge that it shall be adopted after grave consideration and in selected instances. My remarks do not apply to obstruction due to neoplasms growing in the substance of the bowel, or to pressure on it by peritoneal or intra-peritoneal material; but to those very common cases in which, owing either to an atonic intestine failing in its peristalsis, or a normally strong one becoming overloaded by its contents, the balance between the propulsive power of the bowel and the load it has to move is destroyed. The result is the decreasing power of the gut, its extreme distension, and the production of the condition named *ileus paralyticus*. We seldom see these cases until they have arrived at an advanced stage, until great abdominal distension has taken place, and until the issue is very evidently one of much gravity.

I have seen a great number of such cases in my own practice and in that of others, and I wish to reiterate the opinion I have already expressed that laparotomy is in them an extremely fatal operation, and should be undertaken only when other legitimate means have been exhausted, or where they are evidently improper owing to the advanced stage or general condition of the case. To formulate rules as to when or in what conditions such an operation might be undertaken is not possible except to the book-surgeon. The man who has practical experience knows that abdominal surgery cannot be reduced to a formula, and it is long experience and the tact which may be cultivated, but cannot be conferred, that teach us when we must and may open the abdomen in *ileus paralyticus*. To be sure, even the most skilled may fall into the error of delay, and

there is no case so surrounded by doubtful problems as that of which I am speaking.

As regards antecedent treatment I have not much to add to, and nothing to subtract from, what I have already urged in the paper I have quoted.

Of the ordinary local measures, such as the application of heat and rubefacients, I have a growing dread. I have never seen them doing substantial service, and I have repeatedly witnessed their production of such superficial redness and inflammation as served to obscure diagnosis and increase the dangers of operation. If poultices or massage be employed they should be used in such a degree as to soothe or stimulate, but not to produce irritation.

Of the value of belladonna, if used freely and early in the case, I still hold a favourable opinion, and I am convinced that its best therapeutic effect is obtained by administering it if possible uncombined with opium. I have nothing to take from, or add to, the ideas I have already expressed about this drug. Its action is understood, and its administration logical. It relieves pain, while it does its work. It finds its chief use in those cases of peristaltic paralysis due to tympanites or faecal accumulation, and as these are most often seen in obese persons, and are attended by great meteorism—both conditions which render operation extremely dangerous—this drug is often an alternative with the knife. It should be given in full and repeated doses, and pressed until it shows its constitutional effect by producing either dilated pupil or dryness of the throat. The latter symptom is that most usually seen. It is perfectly useless employing this drug unless it be administered to its full extent. It may generally be combined with calomel. It is remarkable that whereas the tolerance of belladonna when given in chronic obstruction is very variable and its employment requires

caution, it is extremely well borne in acute cases. The weak and impeded heart which is present in so many examples of acute obstruction is materially aided by the use of belladonna, which is a most excellent cardiac stimulant.

Of opium itself I still have a respectful terror; it masks symptoms so much that it is capable of being a very destructive agent. Nothing but severe pain indicates its use, and in view of the vomiting which is generally present, it is best employed in the form of morphine, and best administered by the hypodermic method.

Of the early employment of purgatives I am even less afraid than formerly, but I have somewhat modified my opinion as to the best drug to use. While I have not relinquished calomel, I rarely employ it except in combination with belladonna. I have a growing fondness for salines. I generally use the sulphate of sodium, and give it in hourly doses of one or two drachms until an ounce or more has been administered. The worst that can result from the use of a cathartic that fails to purge is disturbance of the stomach, and this unhappily is such a usual incident of these cases that it is of less moment than it otherwise would be. The difficulty of giving a purgative is often very great on account of the vomiting which exists, and in such cases their administration by the rectum is occasionally successful. Before using a purgative in this way the rectum should always be washed out with warm water. The greatest therapeutic *desideratum* of our day is a method of catharsis by hypodermic medication; and whoever can discover a purgative capable of this mode of introduction will have done as much for humanity as Jenner or Simpson. Nothing is more perplexing than the problem of how to purge a patient whose stomach rejects everything that is introduced into it.

Of all the points in the treatment of an overloaded or

paralysed bowel there is none on which my convictions remain stronger, or in which, pleasant to relate, I have seen more improvement in method than in the use of the long enema tube. I have spoken in no uncertain fashion of the uselessness and danger of that instrument called "O'Beirne's tube," all the more awful because it was—and, I fear, still is—the custom to teach that it is safe, and its employment so free from danger that even unskilled persons may use it. Mr. Treves was, perhaps, the first writer to cast discredit on this hoary impostor. It is not enough to recognise its danger unless we also admit its comparative uselessness. Life may be destroyed by it. It is rigid enough to perforate the bowel; and I know cases in which this result has, by a little untrained energy, been achieved. I will undertake to perforate the coats of any average rectum with an ordinary gum elastic long tube, such as is usually supplied by instrument makers; and what can be done may be done, if either enough will or sufficient ignorance be present. So much for its danger; what of its uselessness? I contend that no mechanical effect can be gained by the introduction of fluid into the bowel which is not possible with an instrument 9 or 10 inches long, assisted by the natural penetrating quality of water, by gravitation produced by the posture of the patient, and such gentle pressure as that afforded by the use of a tube to which I shall presently refer. The absurdity of supposing that a pipe can be passed through the sigmoid flexure must be evident to those acquainted with the anatomy of that bowel; and the obvious explanation of the instances where, on external examination, it seems to have been done, can be a difficulty only to the tyro in the dissecting-room or dead-house. The length of mesentery possessed by the sigmoid bowel will often permit it to be pushed into the upper zone of the abdomen by the intrusive instrument. Nor must we overlook the danger of the force with which an injection can

be introduced by the powerful pump usually employed with the long tube. I have seen a bowel which had been ruptured with fatal effect by this agency alone. As regards the use of medicaments other than water, and supposed to be solvent—such as oil or ox-gall—I disbelieve in their efficacy. They have no effect except whatever moral one they may exercise on the patient or his friends. All that can be done, can be best done by warm water alone.

For some years past I have used but two instruments for giving enemas. One is an ordinary Higginson's syringe, to the nozzle of which a No. 12 or 14 red rubber catheter has been attached. For the daily purposes of the rectal toilet, or in cases where the injection is to be retained, or ejected by natural effort, this will be found perfect. It is absolutely safe, and quite painless. It can be used in the most tender infant or the most callous adult; and in instances where injection is called for in the presence of inflamed piles, it is a blessing without any disguise.

The second instrument is an ordinary red rubber tube $\frac{4}{8}$ to $\frac{5}{8}$ of an inch in diameter, such as is used for washing out the stomach. It is convenient to have circles marked at 3, 6, and 9 inches from its extremity, so as to know what length of it lies in the rectum. A large funnel should fit the dilated extremity and should be transparent, so as to allow the fluid, which is being introduced, to be seen. I have found a celluloid funnel more convenient and portable than one made of glass.

The patient lies on his back or left side with the pelvis raised, so as to facilitate the passage of fluid into the sigmoid and descending colon. The only fluid that should be used is warm water, and 8 or 10 gallons of it may be employed at one sitting. The surgeon sits on the right of the patient's bed, introduces the end of the tube, and retains it in position with his left hand, while with his right he holds the other

end of the tube, into which the funnel is inserted. The tube is introduced 3, 6, or 9 inches, as may be indicated, and should be occasionally moved up and down in the anus by the left hand. An assistant pours water into the funnel, and the pressure may be varied and adjusted by the height to which it is raised by the operator. The left hand can be used at any moment, when the pressure in the rectum becomes painful, to pinch the tube, and stop the flow. When as much water has been introduced as can be borne, the funnel is removed, that end of the tube lowered to a basin placed on the floor, and the fluid allowed to run out of the bowel. By repeated operations of this kind large quantities of water may be used, and the bowel emptied without the patient being exhausted by straining or by the necessity of changing his position. The solution of fæces and expulsion of flatus are assisted by the pushing in and out of the tube which I have indicated, and by the varying hydrostatic pressure, caused by alternately raising and lowering the funnel at the free end of the tube.

The advantages of this method over older ones are as follows:—

1. The tube is soft and cannot cause injury.
2. The fluid pressure can be regulated to a nicety, and cannot be made excessive; as if undue pressure threatens, regurgitation into the funnel takes place.
3. Enormous quantities of water can be used.
4. The currents created by alternating hydrostatic pressure have a powerful solvent effect on the fæces.
5. The operation necessitates no exertion on the part of the patient, no change of position, and can be carried on for a long time without causing exhaustion.

I trust I may be excused for entering into a detail of this

kind in the presence of so many accomplished surgeons; but there are many young ears present into which my words may pass. I cannot but regard this apparently simple procedure as one of the greatest improvements which has been introduced into the treatment of bowel obstructions. I have avoided many laparotomies by employing it, and I believe have seen a number of lives saved. Like all other surgical practices, it gains value by experience; but I am convinced that those who patiently employ it will esteem it as highly as I do; and I earnestly urge on my younger colleagues the abandonment of the old rigid tube and the adoption of the simple rectal armament included in the two instruments I have spoken of.

It is not alone in cases of fæcal obstruction that this method finds its use. In every instance where it is sought to unload the bowel it will be found of service. It may be used with excellent effect in the paralysis of peritonitis, and will, in that difficult case, produce evacuation where other means have failed. As a method of unloading the intestine in chronic obstruction, preparatory to operation, its value also expresses itself.

There is no organ of the body which requires more tender treatment than the bowel, and none which is so often left to be dealt with by the unskilled or uneducated. Many surgeons delegate the use of the enema to an assistant, as if this potent engine were unworthy of their own attention, and many who use it employ undue force. "No force" should be the postulate of our work with the intestine. We cannot be too persuasive, and it is because so much bad practice with regard to the use of the enema is followed, that I have ventured on such an occasion as this to urge my views against the use of a rigid tube, and to plead for one which has both complete safety and infinite advantage in point of merit. I offer you no weary list of cases, because, after all,

they are useful only to substantiate opinion, and if you cannot accept a man's deliberate opinion you are not likely to put faith in his cases. Cases can be twisted to prove anything. In such a position as that which, by the kindness of the Fellows of this College, I occupy, a little dogmatism may be excused, and I feel so strongly about this matter of the tube that I have ventured to deal with it in preference to some more brilliant or alluring topic. I beg you to believe that if I speak forcibly it is because I feel conviction, and when I argue for the total abandonment of the older form of tube I desire to assure you that any words I use are spoken with a full recollection of the gravity which my office attaches to them.

Of course the great difficulty to be overcome in acute obstruction is that of diagnosis, and even to the most experienced no finality is possible. There is no branch of surgery in which extended clinical observation and careful reasoning work better together. A simple process of logic will help the most trained clinician to a true conclusion. No cases afford more opportunity for the display of high surgical qualities than those of which I have spoken. Given the proper faculties of observation and deduction, the two qualities which combine to produce great surgical fitness are Thoroughness and Resource, and in the management of obstruction of the bowel there is the most ample opportunity for their development.

ON THE OPERATIVE TREATMENT OF CANCER OF THE JAWS, TONGUE, AND LIPS.

BY SIR WILLIAM STOKES, CH.M. UNIV. DUB., F.R.C.S.;

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[Read in the Section of Surgery, November 9, 1894.]

ALTHOUGH our knowledge of the ætiology and pathology of cancer—and in using that term I wish it to be understood that I employ it in a purely clinical sense and embracing malignant growths generally—is still involved in much uncertainty and doubt, modern pathological research has taught us that the unhappy consequences resulting from it are mainly the outcome of secondary or metastatic products. It has also shown that the malign influences of cancer travel along definite “infection paths,” and that to the old and generally accepted view as to its heredity the Scottish verdict of “not proven” appears to apply. In truth, heredity has come to be regarded, as Mr. Herbert Snow has observed, as “an element much more likely to mislead in diagnosis than the reverse. In seventeen years’ special experience I have learnt that a person who comes to me with a strong family history of cancer is much more likely to be suffering from some innocent ailment than from this dreaded scourge.” The results of my inquiries in the cases I have operated on and tabulated here, as well as in others, are distinctly opposed to the old-established views as to the liability of the disease being transmitted from one generation to another. It is hard to understand why, if the disease is a hereditary one, some special forms of it should be so much more frequently observed in one sex than another. Mr. Barker and Mr.

Morris practically reject the theory of heredity, the former observing that it would appear as though the occurrence of cancer in the families of those who have the disease in the tongue was little more than a coincidence.

The difficulties of coming to a definite conclusion at present on this point are very considerable, as the majority of the sufferers know, or profess to know, nothing of their own family histories, and also it must be remembered that there is a not altogether unnatural disposition on the part of a large number of patients to wilfully conceal the fact that their ancestors were afflicted with any form of cancer. Some years ago, when the late Sir William Gull, Dr. Mahomet, and others advocated, with characteristic enthusiasm, the method of research designated the "Collective Investigation of Disease," I was in great hopes that this important matter would be cleared up, but unfortunately my expectations were not realised, and the subject still remains shrouded in obscurity. Mr. Jessett, in his work on "Cancer of the Alimentary Tract," strongly favours the view as to the heredity of the disease, and to its being a constitutional not a local one; but even his exceptionally large experience in the Cancer Hospital, Brompton, seems hardly sufficient to justify any dogmatism on the subject.

I cannot but be of the opinion, too, that, in the cases that apparently illustrate heredity, tubercular disease and syphilis probably act as important ætiological factors. There can be no doubt that cases of lingual ulceration depending on tuberculosis or syphilis have a tendency after a time to develop into carcinoma, and the accurate differentiation of these cases—especially in the transitional stages—presents, as has been so well pointed out by von Eschsch, problems for solution, than which none are more complex or more difficult in the whole range of surgery. The frequent association of syphilis and cancer, and especially that of the

tongue, is so often observed—and a typical example illustrative of this was recently under observation in the Meath Hospital—that it is impossible to avoid coming to the conclusion that the one largely exercises a predisposing influence in the production of the other. If this ultimately be established beyond all question—and increasing experience and research point in that direction—how greatly it adds to the heavy responsibilities incurred by persons who obstinately, wilfully, and wickedly persist in thwarting the efforts of those who endeavour to mitigate or stamp out what is essentially a preventable malady.

Much has been shown, too, by modern pathological research in favour of cancer being primarily a local affection and probably parasitic in its origin, for, although no carcinoma micro-organism is as yet *en evidence*, “the circumstantial and comparative evidence appears to be so complete,” as Messrs. Ballance and Shattock have observed, that “we do not doubt that cancer is, in its essential pathology, a parasitic disease.” The unquestioned connection between the results of certain sources of irritation and cancer, as seen so often in the lips, tongue, breast, and scrotum, point to the disease being primarily, at all events, a local one.

Though so much still remains to be ascertained, what has been accomplished is of the greatest possible value in a surgical point of view, proving, as it does, not only that the primary mischief but also that the paths along which that mischief has spread must be thoroughly and completely removed if an efficient check is to be put on its onward course.

I allude, of course, to the lymphatics and glands in the proximity of the primary lesion. As there is no group of cancer cases that illustrate better the truth of this than those of the mouth cavity, among which I include the cases in which the lips, tongue, floor of the mouth, tonsils, and jaws are involved, I have deemed it not improbable that a short

statement in reference to the principal cases of this kind that I have operated on might be of interest to the Surgical Section of the Academy.

I regret to say that the accompanying statistical record is by no means a complete one, or represents accurately the number of cases of cancer involving the mouth cavity that I have operated on in either the Richmond or the Meath Hospitals. This is due to two circumstances, the first and principal one being my own indolence in not having kept as accurate a record of my operative work as I should have done, and the other, that I had not the advantage in either hospital of a surgical registrar—an officer whose sole duty should be to make a record of every case admitted and treated in hospital.

However, on the tabular statement are indicated the cases of greatest gravity I have operated on, and which presented features of greatest clinical interest. The cases are 62 in number, consisting of 24 cases of excision of the tongue, 13 cases of excision of one upper jaw, 1 case of excision of both upper jaws, 8 cases of excision of the lower jaw, 3 cases of tumours of lower jaw, and 13 cases of extensive epithelioma involving the lower lip, chin, and floor of the mouth; necessitating complicated and difficult cheiloplastic operations. In the tabulation of these cases, which has been made in a very short time and with much unavoidable haste, I am greatly indebted for the kind assistance rendered to me by Dr. Harvey, of the Richmond, and Dr. William Taylor, of the Meath Hospitals.

Among other things these cases of cancer of the tongue illustrate two points of clinical interest—viz., the comparative rarity of the disease in the female, there being only 4 such in the 19 cases, and another was that the disease in almost all the cases was on the right side. This may, however, have been only a coincidence.

I do not suppose there is any topic in the whole range of surgery on which there is greater difference of opinion among surgeons than the one in reference to the operative treatment of cancer of the tongue. I allude here particularly to the questions in reference to how much or how little should be taken, and in what way it should be taken; whether the lingual artery should be tied, or laryngotomy, tracheotomy, or tamponade be employed as preliminary steps to the operation; what the indications or contra-indications are to the operation; the instruments to use, and the dressings to employ. Mr. Whitehead, for example, advocates the early and complete removal in all cases by a cutting operation done with a scissors; whereas Mr. Jonathan Hutchinson does not think it necessary to remove the entire organ, and prefers the *écraseur*. "Experience has proved," he observes, "that it is by no means necessary to remove the entire organ in cases where the disease is limited to one part. This is contrary to what might have been expected, as the tongue is vascular, succulent, and well supplied with lymphatics." With this statement I feel disposed to concur, as I have not witnessed recurrence of the disease in the portion of the tongue left when the disease was limited and had not crossed the mesial line, but in the majority of cases observed it in the lymphatic glands, or "infection paths," as they have been termed. "Infiltration of the adjacent tissues," Mr. Hutchinson observes, "is not common, but infection of distant glands may be produced by ulcers of the most insignificant size." Tracheotomy and tamponade, advocated so strongly as desirable preliminary operations by M^r. Gill, Barker, and others, were discarded by Volkmann, and the question of the merits or otherwise of previous ligation of the lingual artery is a perennial source of surgical contention.

I have had, through the courtesy of my friend, Mr. Croly, an opportunity of seeing two cases of cancer of the tongue

operated on by him, in which he had performed a preliminary ligation of the lingual artery, and I am bound to say I was much impressed with the bloodlessness of the two excisions; but, notwithstanding this, I still am of opinion that, when the precautions I have mentioned are taken, in the great majority of cases this preliminary procedure is hardly necessary, and it certainly complicates the operation. My present feeling, therefore, would be only to adopt preliminary ligation of the lingual artery in exceptional cases—namely, where there is much thickening and infiltration, and where the entire organ has to be removed; and to the question of the desirability of preliminary bronchotomy and tamponade the same remarks would apply.

Under these circumstances, as in the great majority of these cases, relief from suffering and prolongation of life is, in the present state of our knowledge, the most that can be expected from operative interference; leaving a substantial portion of the unaffected part of the tongue largely promotes the comfort of the patient both as regards deglutition and articulation.

In reference to the way the excision should be performed, I may mention that in my earlier operations I relied almost exclusively on the *écraseur*, being impressed by the favourable statistics and bloodlessness of the procedure, and not sharing the views of those who think that the instrument should be regarded very much in the same light as one of those mediæval instruments of torture, such as are seen at Regensburg or Nuremberg. I have not altogether seen my way to discard my first love, but in order to get rid of what is to my mind the chief defect in the *écraseur* operation—namely, the great length of time that is required for the division of the tissues—I have combined the cutting with the *écraseur* operation, and in that way have effected much economy of time. By cocaïn and other anæsthetics the

operation can now be rendered as painless as it is bloodless. Having freely divided the sublingual tissues with scissors, in the way recommended by Sir James Paget, I usually insert the traction ligatures, one through the apex, and the other through the base of the tongue at a point well behind where the section of the tissues is to be made. To do this efficiently a buccal section, such as that recommended by Jaeger, Maisonneuve, and my former teacher and colleague, Maurice Collis, may be required, but this, I think, is only necessary in cases where the disease is extensive and the operation likely to be one of exceptional severity. Following Cloquet's suggestion, advocated by Morratt Baker, of splitting the tongue down the middle line with scissors to a point well beyond where the subsequent section of one or both lateral halves is to be made, I place round the base of one or other or both of these an *écraseur* chain. The tissues are then cautiously divided, but before complete division I have latterly transfixed the undivided portion containing the lingual artery with a blunt needle, armed with a strong silk, and after firmly ligaturing it, complete the division of the tissues with either *écraseur*, scissors, or knife. Careful removal of all enlarged neighbouring glands is, of course, essential. The initial and final steps are, as a rule, carried out by cutting with scissors, and the intermediate one by the *écraseur*, the advantages of which are thus retained while the disadvantages are got rid of.

In two cases of lingual cancer I have operated mainly by the cautery—in one by the galvanic cautery, as recommended originally by Middeldorpf, and in the other by Paquelin's thermo-cautère. In both cases there was severe secondary hæmorrhage, and consequently I entertain not unnaturally a distinct prejudice against that method of removing a tongue.

As regards the after-treatment of the cases operated on

for cancer of the tongue or jaws, I have little to say, except to urge the necessity of frequent irrigation of the mouth. One of the most potent agencies for mischief that formerly attended these operations—namely, pulmonary complications consequent on the absorption or inhalation of septic agencies emanating from the wound—may, I think, be said to be practically disarmed by the free and constant use of antiseptic irrigation. The one I usually employ is a strong boric solution, and in not one of these cases I have operated on has there been during convalescence evidence of septic mischief. The case of the patient, both of whose upper jaws I almost entirely removed, died, no doubt, of bronchitis and pneumonia; but then it is by no means clear that these affections were connected with septic infection. The illness which proved fatal occurred a considerable time after the operation. The wounds had quite healed, and as he was in the habit of going out every day, I think it is just as likely that cold may have induced his illness as any septic agency.

In reference to operative details in excision of the upper jaw, I have little or nothing to add to what I have already published in various journals. The incision, as originally recommended by Sir William Fergusson, limited to the middle line of the upper lip and the groove between the alar nasi and the cheek, and carried upwards towards the inner angle of the eye, is, I think, insufficient to enable the operator to effect a complete excision of the bone; but when the neoplasm is limited in extent and confined to the anterior part of the alveolus and hard palate it may suffice. The usual modification, as all operators here are aware, is to carry the incision outwards along the lower border of the orbit to the middle line of the malar bone. I usually have made this latter incision, not horizontal but curved, with its convexity downwards, corresponding to the lower margin of the malar bone. This modification I have adopted solely

for cosmetic purposes. The separation of the maxilla from its fellow I generally effect by powerful bone forceps, and the section of the malar bone on a line with the sphenomaxillary fissure with a fine resection saw. All the other necessary divisions of bone are effected by forceps. In the case where the double maxillary resection was performed, I did not, in dealing with the second maxilla, follow the recognised course of making fresh skin incisions, but dissecting off and reflecting backwards and outwards the nose and tissues covering the right maxilla, and dividing its attachment to the malar bone with forceps, made an infra-orbital section of the bone, and then removed it, leaving, however, the orbital plate.

The steps taken after the operation consisted in careful drying and cleansing of the wound, and subsequently treating it with iodoform and boracic acid. To prevent the access of blood into the air passages, I have never performed a preliminary tracheotomy in any of these cases, nor have I adopted the very inconvenient method of keeping the patient's head hanging well back over the edge of the table during the operation, as recommended by Professor Rose. To surgeons who are able to exercise their art confidently, quietly, with deliberation and care, and who do not think that rapidity and brilliancy are convertible terms, such devices appear to me to be uncalled for, and to add materially to the complications of an operation which, without them, are sufficiently great.

As regards excision of the lower jaw, partial or complete, I may repeat the opinion I have already on more than one occasion expressed as to the absence of any necessity for dividing the red border of the lip, the desirability of a free division of the soft parts previously to making any section of the bone, that this latter can best be effected by the use of the chain saw; also that arrest of hæmorrhage from

division of the dental artery can be effected, not so well by the actual cautery as recommended by Mr. C. Heath, as by plugging the duct or foramen with a fine pointed piece of wood; that a traction ligature through the apex of the tongue is desirable in the event of there being any tendency to its falling back. In the cases, too, where there is a tendency to the remaining portions of the bone being drawn inwards, I have found that the application of that part of L'Estrange's apparatus for fractures of the lower jaw, for correcting the lateral over-lapping displacement occasionally met with in that injury, is of much service.

For cosmetic purposes it is desirable, especially when the patient is a female, to make the external incision more below and behind than in front of the ramus of the jaw, and that the minimum of cicatricial deformity is obtained by the use of figure of eight sutures, the finest entomologist pins and soft floss silk being employed for the purpose.

In regard to the cases of labial cancer, a few of which are appended to this tabular statement of cases, I have again to express my regret that I did not keep a more accurate record of the number of them I have operated on. Most of the cheiloplastic operations that have been proposed I have tested, and with a fair measure of success. But labial cancer is one of the conditions, every example of which must be dealt with on its own merits; however, I desire to state that in my opinion, for cases of extensive cancerous diseases of the lips, Syme's operation, like everything else that emanated from that illustrious surgeon, possesses merits not found in any other of the many procedures that from time to time have been advocated.

Another source of regret is the limited number of cases I have been able to keep under observation for any length of time after operative interference, so that the facts connected with the ultimate results in the majority of the cases could not

be ascertained, but still the outcome in a large proportion of cases that I have been able to follow is encouraging, and gives grounds for hoping and confidently expecting from the resources of operative surgery better results in the future, not merely in affording relief from pain, which is at times so extreme, and "the misery of one of the most distressing and disabling conditions," as Sir James Paget has so well described it, that man can be afflicted with, but also prolongation of life to some, and complete recovery to others.

In the future it is probable—indeed certain—that some more reliable weapons will be found for attacking cancer than the surgeon's scalpel or cautery. To bacteriological research we look with expectancy and confidence to furnish such weapons, and the search for, discovery and destruction of the still perfectly unknown carcinoma micro-organism will be, as von Billroth said, one "of the greatest tasks reserved for future generations!"

Operations for Cancer of the Tongue.

No.	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
1	Female	30	4/2/80	Cancer of left side of tongue	Removal by écraseur	Good	Buccal splitting required
2	Male	25	21/4/80	Epithelioma of tongue	Ligature of anterior and right side of tongue	Unknown	
3	Male	60	1/12/80	Cancer of tongue	Removal by écraseur	Good	Return of disease in sub-maxillary glands seven months later
4	Male	56	27/3/82	Cancer of tongue and floor of mouth	Removed by écraseur, also of glands at angle of jaw on each side	do.	Both linguals ligatured, and removal of piece of lower jaw
5	Male	75	11/3/85	Cancer of floor of mouth and tongue	Excision mainly by thermo-cautery	Relieved	Disease returned in eight months
6	Female	55	29/4/85	Cancer of tongue	Excision by two écraseurs	Good	Ligature of lingual
7	Male	52	8/5/85	Cancer of tongue	Excision	do.	do.
8	Male	45	27/5/85	Cancer of tongue, soft palate, and lower maxilla	Excision of half the tongue, lower maxilla, and part of soft palate	Relieved	Ultimate history unknown
9	Male	75	30/11/85	Cancer of tongue and floor of mouth	Excision	Death	See Case 5.
10	Male	50	14/11/83	Epithelioma of tongue, floor of mouth, and submaxillary glands	Excision of tongue with portion of lower jaw	do.	
11	Male	44	27/3/82	Epithelioma of tongue	Excision of tongue by Whitehead's operation	Good	

12	Male	50	11/7/83	Epithelioma of tongue	Excision of one lateral half	do.
13	Male	45	3/5/84	Large, excavated, ragged ulcer, occupying right side of tongue	Excision of right lateral half with portion of lower jaw	Favourable
14	Male	74	6/11/88	Epithelioma of tongue, right side	Tongue split and right lateral half removed	Good
15	Male	54	15/1/89	Epithelioma of tongue extending to root of the tongue. Glands greatly enlarged in neck. Great pain	Removal by ecraseur	do.
16	Male	45	2/1/71	Epithelioma situated on right side of anterior third of the tongue, enlargement of submaxillary glands, infiltration, pain, and induration	Excision, with removal of submaxillary glands	do.
17	Male	48	Feb., '71	Ulceration (epithelial) above and to left side of tongue extending far back, also submaxillary glandular enlargements	Excision	do. Patient seen one year and ten months after the operation. No evidence of recurrence
18	Male	50	Feb., '75	Epithelial ulceration, left side of tongue with glandular enlargements	Excision	do. Patient seen eighteen months after operation. No return
19	Male	56	Jan., '76	Epithelioma on right side and extending to upper surface and across mesial line. There was but one gland perceptibly enlarged. Infiltration very great.	Excision, partly by scissors and partly by écraseur	do. Patient seen three months after operation. No return

Operations for Cancer of the Tongue—continued.

No.	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
20	Female	41	16/2/80	Epithelial ulceration, extensive, spreading from left side of tongue to upper surface. Several enlarged glands	Excision	Good	Disease returned four months after operation. Chian turpentine tried with apparent temporary improvement
21	Male	60	Nov., '80	Epithelial ulceration on upper and anterior portion of tongue, thickening, induration, pain, and profuse and constant fetid discharge from the mouth	Excision by écraseur	do.	Patient left two months after operation, "in every way pleased with the result." Subsequent history not obtained
22	Male	50	20/7/91	Ulceration of four months' standing, situated on right side. Oval in shape	Division of sub-lingual attachments, Division of tongue along mesial line, and removal of right lateral half by wire écraseur, and scissors	do.	
23	Female	57	5/11/81	Extensive epithelioma of tongue and palate	Removal by scissors and cautery	—	Patient died six months after
24	Male	55	10/7/94	Epithelioma of right lateral half of tongue and floor of mouth.	Removal by scissors and écraseur	Relieved	Rapid return of disease in right tonsil

No.	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
25	Female	29	21/2/80	Tumour of inferior maxilla, sarcoma	Partial excision of lower jaw	Good	
26	Male	31	30/7/80	Epithelioma of lip and secondary cancer of jaw	Excision of lower jaw. Bone divided at each angle	do.	Ultimate result not ascertained
27	Male	45	21/10/80	Epithelioma. Disease involving lower lip and tissues covering chin	Partial excision of lower jaw	do.	
28	Male	47	25/10/82	Sarcoma, base of skull	Excision of upper jaw	do.	
29	Male	17	6/3/82	Sarcoma of upper jaw, following extraction of first upper right molar	Excision of tumour	do.	
30	Male	13	26/11/83	Fibro-sarcoma of superior maxilla	Excision of tumour with superior maxilla.	do.	
31	Male	50	28/2/68	Epithelioma of upper jaw, occupying chiefly hard palate	Excision of upper jaw	do.	
32	J. G.	18	22/9/79	Recurrent epulis of upper jaw, operated on 12 months previously	Excision of tumour	do.	Copious secondary hæmorrhage
33	M. J.	45	23/7/78	Recurrent epulis of lower jaw	Excision	do.	
34	—	40	18/9/78	Epulis	do.	do.	
35	Female	57	13/12/79	Submaxillary sarcoma	do.	—	Patient died three months after his return to the country
36	Male	20	25/2/80	Cystic tumour of upper jaw	do.	Good	
37	Female	24	1/3/80	Sarcoma	Excision of lower jaw (partial)	do.	
38	Male	45	14/6/80	Epithelioma	do. do.	do.	

Operations for Cancer of the Jaws—continued.

No.	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
39	Male	65	28/11/81	Epithelioma of lower lip; disease extending to tissues covering anterior part of lower jaw	Excision of lower lip and (partial) of lower jaw	Good	
40	Male	30	30/10/82	Sarcoma of upper jaw	Excision of upper jaw	—	
41	Female	13	3/12/83	Tumour (epithelioma) of upper jaw, probably originating in antrum. Rapid growth	do.	Good	
42	Male	60	—	Epithelial ulceration of anterior part of alveolus on right side of upper jaw extending to muco-periosteum of hard palate	Partial excision of upper jaw	do.	
43	Male	59	1/5/87	Epithelioma of left superior maxilla	Excision of upper jaw	do.	
44	Female	—	30/1/93	Malignant tumour of antrum (epithelioma?)	do.	do.	Left hospital April 21st well. Not heard of since
45	Female	—	20/3/93	Malignant tumour of five months growth; about size of a large egg; extending into mouth as well as externally	do.	do.	Left hospital April 28th
46	Female	52	12/9/93	Malignant disease of superior maxilla	do.	do.	Patient left hospital 14th November
47	Male	54	14/9/91	Sarcomatous tumour, involving both superior maxillæ	Excision of the left upper jaw, and right upper jaw, but leaving orbital plate of latter	—	Patient recovered from the operation, but a month afterwards contracted pneumonia, of which he died
48	Male	45	22/1/94	Sarcoma	Excision of lower jaw	—	Recurrence of disease in six months
49	Male	49	6/1/95	Epithelioma of tongue, floor of mouth, and lower	Excision of lower jaw (partial), floor of mouth and base of tongue	—	Too soon (March 1) to judge of result

Operations for Cancer of the Lip.

No.	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
50	Male	56	15/12/79	Epithelioma of lower lip, floor of mouth and sub-maxillary glands	Excision and Symes' cheiloplastic operation	Good	
51	Male	46	20/1/82	Epithelioma	Symes' cheiloplastic operation	do.	
52	Male	40	4/2/80	Epithelioma of lower lip	Excision	do.	
53	Male	72	1/10/80	Extensive epithelioma of lower lip	Zeis' operation	do.	
54	Male	56	4/2/81	Epithelioma of lip, and secondary enlargement of cervical glands	Excision	—	
55	Female	50	23/7/81	Epithelial ulceration of lip and involving cheek. Rapid growth	do.	Relieved	
56	Male	40	20/1/82	Recurrent epithelioma of lower lip	do.	Good	Operation performed eight months previously in the country
57	Male	74	1/3/82	do.	do.	do.	Previous operation six years ago

Operations for Cancer of the Lip—continued.

N ^o .	Sex	Age	Date	Nature of Case	Operation	Result	Remarks
58	Male	55	19/9/83	Recurrent epithelioma of lower lip	Excision	Good	Former operation ten years previously
59	Male	65	16/10/85	Epithelioma of lip	do.	do.	Patient's father died of cancer of lower lip
60	Male	—	5/7/88	do.	do.	do.	
61	Male	55	29/9/93	Extensive epithelioma of lip and involving angle of mouth	Modification of Zeis' operation	do.	
62	Male	68	17/10/94	Recurrent epithelioma of lip	Excision and plastic operation	do.	This was the fourth time the patient was operated on. The first time was in 1874, in the Richmond Hospital; the second time, in 1884, in the same hospital; the third time, in 1892, in the Meath Hospital; and the fourth time in 1894.

The PRESIDENT congratulated the Section on the paper which had just been read, and in commenting upon it expressed his strong belief in the relationship between cancer of the tongue and syphilis. The number of cases of doubtful disease proved to be cancer, and the number of undoubted cases of syphilis which eventuated in cancer must have struck every surgeon of experience. He had a very unfavourable opinion of operations on the tongue, but thought that, if touched at all, the whole of it should be removed. He considered that every plastic operation in such cases not absolutely necessary was to be deprecated.

MR. BENNETT, in referring to the question of heredity of malignant disease, said that at the meeting of the British Medical Association at Cardiff the representatives from Australia had directed the attention of members to the fact that the Insurance Societies peculiar to Australia had instructed their medical examiners to exclude the question of heredity.

MR. CROLY said he had not been able to trace heredity as often as one might have expected. In illustration of the unfavourableness of operating on the tongue he mentioned two cases, one of which was a young man, apparently a very favourable case, with cancer on the side of the tongue. He excised half the tongue, but in another year secondary growth occurred in the glands. Referring to the *écraseur* he said that he had given it up on account of its slowness, and also because considerable bleeding took place during the operation. With regard to ligature of the lingual arteries, he asked why had preliminary tracheotomy been performed if it was not for the prevention of suffocation from blood. In partial excision it was urged that if only one lingual was tied hæmorrhage would come from the other, but he had not found it so. One advantage of ligaturing the lingual artery was that the same incision served also to examine the whole digastric space and clear out all the glands there. Owing to the tenseness of the cervical fascia it is very difficult, as also in the axilla, to determine before the operation whether the glands were enlarged or not. He considered it better surgery to remove the whole than part of the tongue, especially as complete removal did not prevent articulation. When the disease returns it nearly always returns in the glands of the neck.

MR. WHEELER was not in favour of removing the whole tongue when only a small part was involved. In operating he advised the use of the thermo-cautery scissors; but they should not be heated too much, so as to allow the arteries to spout, as they

can then be clipped. He also concurred in the belief that syphilis was a very potent factor in producing cancer of the tongue. After removal of the entire tongue he found his patients could articulate well.

MR. THOMSON entirely agreed with Mr. Croly with regard to the amount of the tongue that ought to be removed; for after an epithelial ulcer has been in existence a short time the glands were already infected; but it took some time for them to enlarge sufficiently to be detected. Even from a very small ulcer infection would follow, so that he believed that partial removal was not good surgery. The return of cancer of the tongue was so frequent that he thought that many cases of non-return were mistakes in diagnosis. He agreed with Mr. Croly that tracheotomy was unnecessary. He had never seen septic trouble set up in the lungs after operation.

MR. MYLES insisted on the necessity of removing any enlarged glands. He considered that a ligature passed round the root of the tongue was of no use in checking hæmorrhage from the lingual arteries, owing to the fact that they are present only in the anterior part of the tongue. He denounced the *écraseur*, because, he said, when being used it had a tendency to travel in the direction of least resistance, and so to encroach upon the easily broken-down cancerous mass. In removal of the upper jaw he considered that preliminary tracheotomy greatly facilitated the administration of the anæsthetic; and that, if the tube was removed immediately after the operation, no bad results followed, and the wound healed by first intention.

MR. TOBIN emphasised the importance of opening the digastric triangle and removing any infected glands. When preliminary tracheotomy was performed it was better to remove the tube at once, and so lessen the tendency to septic pneumonia.

MR. FRANKS, in referring to complete or partial removal of the tongue, thought that each case must be decided on its merits; as, for instance, if a patient has got a small ulcer on the side of the tongue, well away from the middle line, it would be a mistake to remove the whole tongue. He himself had had two successful cases of partial removal. The tendency of the disease was to follow the lymphatic channels to the glands, not to cross the middle line. He thought that, even if the operation was not successful, owing to the return of the disease in the glands of the neck, the relief the patient experienced justified the operation. Galvano-cautery possesses the great advantage of speed of operation as

compared with the *écraseur*. He followed Mr. Whitehead's method of operating in excision of the tongue, and was never troubled with secondary hæmorrhage. In operations about the mouth generally he considered Rose's position, with the head lowered, the ideal one.

SIR WILLIAM STOKES, in replying, said that he had seen many cases in this country and in Germany of excision of the jaw in which a preliminary tracheotomy had not been performed. He agreed with the President that cosmetoplastic operations ought to be entirely secondary to thorough removal of the disease. He thought an imperfect operation was sometimes permissible to relieve the patient of a fœtid ulceration in his mouth, although complete removal of the disease could not be hoped for. He had a personal dislike to the thermo-cautery, as secondary hæmorrhage had occurred in the two cases in which he had used it.

ON ADENOID VEGETATIONS IN THE NASO-PHARYNX.

By KENDAL FRANKS M.D., F.R.C.S. ;

Surgeon to the Adelaide Hospital.

[Read in the Section of Surgery, December 7, 1894.]

I VENTURE to bring before you a subject which, to a great extent, has been the monopoly of throat specialists, and which has excited much interest among them ever since Meyer, of Copenhagen, demonstrated the existence of adenoid vegetations in the naso-pharynx in 1860.

The subject is one of great interest and importance on account of the comparative frequency of the condition, the numerous evil effects which such growths occasion, the facility, as a rule, of recognising their existence, and the beneficial results, both immediate and remote, which follow their removal.

As this is the first occasion upon which the Academy has been invited to consider the question, I shall, with your permission, shortly recapitulate its history. Every practitioner has repeatedly had presented to his notice cases of children, or young adults, who have suffered from continuous colds in the head. He observes that there is an abundant muco-purulent discharge, especially in children, oozing from the nostrils, or trickling down the back of the throat. The voice is singularly deficient in resonance, the nasal consonants cannot be pronounced, and speech sounds dead. The mouth is kept permanently open, the breathing is entirely, or almost entirely, oral, and he is told by the parents that the child snores in his sleep, is restless, and very frequently has a running from the ear. If the child have a pair of large

tonsils, all these symptoms were laid at their door, and their removal, when the child was old enough, was strongly recommended. Or if the practitioner happened to be one of those who have some ingrained prejudice against the removal of tonsils, the parents were told that when the child, in process of time, attained the age of thirty, or thereabouts, the tonsils would gradually subside, and the cause of all the trouble would thus be remedied by nature. If, however, the tonsils were found to be normal in size, the diagnosis then was that the child was the subject of a strumous diathesis, cod-liver oil and country air were prescribed, or, if it happened to be country-bred, it was sent to the seaside. This routine was supplemented by nasal douches, the insufflation of powders, and syringing of the ears.

In former days, while "adenoid vegetations" were still an unknown quantity, the removal of enlarged tonsils, when advocated and performed, was frequently followed by most unsatisfactory results. The snoring was perhaps mitigated, but the coryza, the oral breathing, and the ear complications, remained unrelieved. The more enterprising sought for better results by arguing that as the tonsils as a cause had been eliminated, the cause must lie in the nasal cavities, when they observed that the mucous membrane was frequently hypertrophied, and consequently scarification and cauterisation of the mucous membrane in the nasal passages, especially over the turbinated bones, was freely indulged in. Disappointment was again the reward of these attempts. It was just such a case which led Meyer to discover the *fons et origo mali*. "An instance of this kind," he says,^a "led me to discover the true seat of the complaint. I had cleared the obstructed passage through the nose, removed the enlarged tonsils and the swelling of the throat and soft palate, but the manner of speaking remained as deficient as ever.

^a Med. Chirurg. Trans. Vol. XXXV. 1870. P. 193.

The patient, a young lady, now underwent a regular course of training in pronunciation, but with no better result. She then came to me again. Having found rhinoscopy impracticable, I now passed my forefinger behind the soft palate, up into the so-called 'naso-pharyngeal cavity,' and was very much astonished to find this almost entirely filled up by *soft masses*, which, giving way to the finger, felt very much like a bunch of earthworms, and, hanging down from the roof of the pharynx, completely closed up the posterior nares."

Meyer succeeded in removing these growths with most satisfactory results; the voice became clear almost immediately, and the patient was able to breathe freely through the nose. When seen, eighteen months after the operation, there had been no return of her troubles.

Of the nature of these growths it is necessary to say a few words. In the pharynx and naso-pharynx, as you know, there exists normally a large quantity of adenoid tissue. The faucial tonsils are composed of it; small masses of it are found scattered over the posterior wall of the pharynx constituting the follicles; it is particularly abundant in the naso-pharynx. In the middle line on the posterior wall, at the top, where it curves over to form the vault, a large mass of adenoid tissue is conglomerated to such an extent as to have received the name of the pharyngeal tonsil, or *Luschka's tonsil*. On the lateral walls of the naso-pharynx there exists also a quantity of adenoid tissue, which can be easily recognised, when it is hypertrophied, as swollen bands extending downwards immediately behind the posterior pillars of the fauces.

Now in the two earlier decades of life this tissue is peculiarly liable to hypertrophy. This hypertrophy may be confined to one particular region, or we may find all these regions affected simultaneously with adenoid hyperplasia. Thus we frequently find the tonsils enlarged whilst the follicles

in the pharynx and the adenoid tissue in the space above show no alteration from the normal. On the other hand, we sometimes find that while the tonsils appear quite normal the naso-pharynx may be completely blocked by these adenoid overgrowths. Sometimes we find the follicles on the back of the pharynx alone enlarged, but in my experience this is more frequently seen at a later period of life than when the other regions are affected. More frequently, however, we find in young subjects that the faucial tonsils, the pharyngeal follicles, and the adenoid tissue in the naso-pharynx suffer in common. Thus, if on inspection we find a child has large tonsils, and if we can see at the same time those red or greyish excrescences on the posterior pharyngeal wall, which we know are hypertrophied follicles, we may in general predicate that adenoid vegetations exist in the vault above, and we shall seldom find ourselves mistaken.

The microscopical characters of these growths has fully established their nature, and has proved that they are composed of adenoid tissue, and are identical with the closed follicles of the mucous membrane from which they arise. That this is so can easily be seen by some sections which Prof. Scott has kindly made for me from growths which I recently removed from the naso-pharynx of a young lady who was suffering from the condition we are now discussing.

In the naso-pharynx itself we find considerable variety in the disposition of the hypertrophied adenoids. Sometimes the tissue on the side walls shows the greatest amount of enlargement; at other times the overgrowth seems to be chiefly confined to the pharyngeal tonsil itself. In many cases the whole vault and walls seem to be covered by masses of adenoid vegetations. The appearance in the rhinoscopic mirror resembles then a bunch of small grapes. When Luschka's tonsil is the chief seat of the disease, it usually protrudes from the roof and posterior wall of this space, in

appearance somewhat resembling a cock's comb. Lastly, let me add that these growths may be quite soft, or they may be hard and tough. They bleed with the greatest facility, and to a certain extent are erectile, as observed by Meyer. From the fact that the presence of these growths induces and keeps up a chronic catarrh of the cavities in their neighbourhood, we find, as we might have inferred, a thickening and swelling of the mucous membrane in the nasal cavities, chiefly over the turbinated bones and over the posterior portion of the septum. The mucous membrane covering the soft palate, the pillars of the fauces, and the posterior pharyngeal wall present a similar morbid condition.

The symptoms produced by these adenoid vegetations, as Meyer first named them, depend upon their number and size, and still more upon their situation. If the growths are few in number and small, the symptoms may scarcely attract attention, or may be so reflected to other regions as to draw away the mind from the naso-pharyngeal space. Thus I have several times seen a persistent cough, for which no other cause could be found, disappear after the removal of some adenoid vegetations in the vault of the pharynx, or after cauterising some hypertrophied follicles on the posterior wall. Frequent headache has been observed in connection with these growths, occurring in about 27 per cent. of the cases. Prof. Snellen and Dr. Guye, of Amsterdam,^a have called attention to a form of chronic catarrh of the conjunctiva which refuses to yield to treatment until the coincident vegetations in the naso-pharynx have been removed.

When the growths are so exuberant, or are so situated on the posterior wall as to completely close up the air-passage through the nose, the symptoms become so marked and so characteristic that a diagnosis can be made, so to speak, in the street. It is sufficient to have once recognised a peculiar

^a Trans. Internat. Med. Congress. 1881. Vol. III. P. 290.

type of countenance familiar to us all as the facies of post-nasal adenoids, to recognise it again. These characteristic signs and symptoms depend on the fact that breathing through the nose is impossible, therefore oral breathing is a necessity; hence the mouth remains permanently open. Not only are the nasal sounds *m*, *n*, and *ng* impossible of production—as we hear also in cases of nasal polypi—but what helps to distinguish these two conditions is that when adenoid vegetations are abundant the *resonance* of the voice in the anterior and posterior nares is entirely lost, so that the speech sounds short, stuffed, or “dead.” The nose by its long inactivity becomes pinched, and it is not unusual to find the nostrils markedly small and narrow. The open mouth with pouted lips, the expressionless face, and the lustreless eye, make up a characteristic picture suggestive of a dull and vacant mind. Indeed it has been frequently noted that children suffering from post-nasal adenoids are usually so dull and inattentive at their lessons that a new term has been coined, and the mental condition styled *aproxesia* (*a* and *πρόσεξις*—attention).

More important than any of these symptoms, however, are the ear troubles which accompany this disease, and are directly due to it. Ingals, of Chicago,^a states that he has found the sense of hearing impaired in 33 per cent. of his cases. In mild cases or in the earlier stages a temporary deafness ensues whenever the patient catches cold, which in cases of adenoid vegetations occurs pretty frequently.

After a time the intervals of good hearing become shorter, and deafness more persistent. Pain in the ear and tinnitus are frequently complained of; aural treatment, the use of Politzer's bag, or the Eustachian catheter gives relief for a time. If the presence of adenoids is unrecognised, or if they remain untreated, the condition of the ear becomes

^a Journal, Amer. Med. Assoc. Sept. 29, 1894.

more and more aggravated, chronic otitis media becomes established, inflammatory changes take place in the delicate conducting apparatus of the middle ear, and the hearing is irretrievably damaged. Otorrhœa is very frequently observed in these cases.

These changes in the ear are rarely due to the mechanical obstruction of the trumpet-shaped openings of the Eustachian tubes at the back of the nose by means of these growths. We find ear troubles in cases where the growths do not directly impinge on these openings. They are due to the chronic catarrh which is an invariable consequence of these adenoid vegetations. The chronic inflammation and consequent swelling and thickening of the mucous membrane, already referred to as existing in the nasal cavities, spread into the Eustachian tubes, and by degrees diminish the lumen, or during exacerbations block them up altogether.

In the presence of adenoid vegetations in the naso-pharynx we have, I believe, the most prolific cause of that large class of cases which are indifferently grouped together under the head of "throat deafness," and I believe that when exploration of the naso-pharyngeal space becomes more general, and its treatment more thorough in early life, there will be fewer people to deplore that in the race of life they have been so heavily handicapped that they are practically disqualified for the competition.

The usual period for these growths to declare themselves is about the third year. One of the earliest symptoms is that the child sleeps restlessly; it keeps tossing about, and is frequently terrified by bad dreams. The child sleeps, indeed, but he does not rest. The ravelled sleeve is but poorly knit up, and consequently he looks unhealthy, and develops badly. All the ill effects of oral breathing become by degrees apparent. At night, as the mouth remains open, the saliva is not swallowed, but trickles out on the pillow.

The constant muco-purulent discharge from the back of the nose trickles down to the throat, is swallowed, and gradually destroys the appetite. The mental dulness of the child, the waxen, sometimes greyish, aspect of the face, the general delicacy so frequently complained of by the parents, may all be referred to one consequence of these growths—the deficient supply of oxygen—the chronic carbonic acid poisoning of the system due to defective respiration.

Lowenberg^a has called attention to a remarkable deformity of the chest walls which he has observed in many cases of very voluminous adenoid vegetations in young subjects. At the International Medical Congress in London in 1881, he thus describes it:—"The sternal ribs are depressed towards the lungs; their cartilages, on the contrary, bulging outwards, form a series of projections without, however, presenting the knotted, beady appearance of rachitis. The sternum, instead of projecting forwards, is remarkably depressed, especially towards the xiphoid cartilage, which is often sunk deeply inwards." He considers that this malformation occurs in early life, when the adenoid growths are beginning to impede respiration through the nose, and the child has not yet learned to breathe easily by the mouth. At this period at every inspiration sufficient air does not enter the lungs to satisfy the vacuum formed, hence the external atmospheric pressure is not sufficiently compensated by the internal pressure, and at this early period the yielding thorax succumbs to the increased strain.

Among children a host of remote symptoms, what may perhaps best be described as reflex symptoms—such as choreic movements, spasmodic croup, strabismus, &c.—have been found associated with post-nasal growths, and have disappeared when these growths have been cleared away. Moritz Schmidt lays special stress on the occurrence in

^a Les Tumeurs Adenoides du Pharynx-Nasal. Paris. 1879.

many such cases of nocturnal enuresis, and advises us to bear this fact in mind in dealing with this distressing condition.

Among adults I have found reflex symptoms comparatively few. The most frequent is a distressing, hacking cough, sometimes in its paroxysms resembling whooping cough, generally without the satisfaction of expectoration. I have also observed violent sneezing, sometimes coming on at a particular hour each day, with all the usual signs of hay fever. But these cases are the exception. Adults generally seek advice on account of the discharge trickling down the throat from behind the nose, or the nasal obstruction, or still more frequently on account of defective hearing.

The aetiology of adenoid hypertrophy presents many difficulties. The causes which lead to vegetations in the naso-pharynx are similar to those which lead to hypertrophied tonsils. They are attributed to hereditary influences, and I have frequently observed that one or other of the parents who bring their children for treatment frequently presents the characteristic appearance and symptoms which indicate that the parent has, at an earlier period, suffered from the same malady. The exanthemata are responsible for a certain number of cases. Thus Dr. Ingals found that in 100 cases 3 per cent. appeared to form immediately after measles, 4 per cent. after scarlet fever, 1 per cent. after diphtheria, and 3 per cent. were attributed by the parents, or the patient, to pneumonia or influenza. In 63 per cent. nothing could be discovered which appeared in any way to account for the origin of the disease.

The diagnosis of adenoid vegetations can in general be easily made. In well marked cases the symptoms are so prominent that a diagnosis can be made on them alone. In others, especially where the symptoms are more of the remote or reflected kind, the diagnosis can only be completed by careful examination, which consists of two methods—inspec-

tion and exploration by the finger. These, when practicable, should be resorted to in all cases, either to originate or to complete the diagnosis. To inspect the post-nasal space, recourse must be had to the rhinoscope. In young children this is frequently impossible, but when practicable, as it generally is, it affords the most valuable information. We can then see these growths, if they exist; we can estimate their size and situation. The other method of examination has the advantage that it can be employed when the rhinoscopic mirror is useless. The method I employ is to stand behind and to the right side of a patient seated on a chair. The left arm encircles the head, and steadies it, while the left hand, if necessary, can hold something between the patient's teeth, if there be any danger of being bitten. Then the right forefinger, with the palmar surface upwards, is introduced into the mouth, and passed rapidly till the pharyngeal wall is reached, when, by crooking it upwards, it can with a little practice be insinuated into the naso-pharyngeal space without difficulty. The presence of adenoids is very easily recognised, and when once felt could never be mistaken. This examination will cause a little bleeding on account of the vascularity and extreme softness of these growths.

It is an unquestionable fact that as a patient approaches the age of 30 or 35 adenoid vegetations in the naso-pharynx, like the tonsils themselves, have a tendency to undergo a retrograde process and to atrophy. If we could be sure that in the meantime they would do no mischief of a more or less permanent kind, we might well leave them alone and trust to the unaided powers of the great *vis medicatrix Naturæ*. But this is just the very thing which we cannot be sure of—nay, we know very well that the evil effects of such growths outlive the growths themselves. The effect on the personal appearance, which is never lost when once

firmly established, is the least part of the harm done. Granular sore throat, as a consequence of these adenoids, forms a most remunerative disease for the throat specialist.

Among a host of other ill effects one stands prominently forward, not only as one of the most frequent, but as one of the most calamitous sequelæ of neglected post-nasal growths. That one is the damage done to the ears, and which forms the great bulk of cases of so-called "throat deafness."

The treatment of these adenoid vegetations resolves itself into two categories—the medical and the surgical. The medical treatment consists of the employment of medicated douches, or insufflations. Solutions, either douched or snuffed up through the nostrils, should be used at blood-heat. They should be approximately of the specific gravity of the blood, if anything a little denser. The most useful salts are—the chloride and bicarbonate of sodium, baborate of soda, or boric acid, the chlorate of potassium, and the chloride of ammonium. These may be combined together according to the view of the prescriber. I have also found Condyl's ozonised sea-salt very useful; a small teaspoonful of the salt to a pint of water, at 100° F., makes a solution of the desired quality. This solution may be used with a Thudichum's siphon douche, or it may be sniffed up each nostril; the former is the preferable method. In very small or very recently hypertrophied adenoids this method may occasionally effect a cure; but as a rule it is only palliative, and the slightest provocation, such as a cold, will bring back the symptoms.

When more radical treatment is required—and that is the case in by far the larger number of cases—if the growths be small and sessile, and doing comparatively little mischief, they may be cauterised. The best caustic for this purpose is, I consider, chromic acid; but it requires very careful manipulation to apply it to the adenoids, and the adenoids

alone. The galvano cautery is sometimes advocated, but I have found its use in the naso-pharynx very cumbersome, because it should not be employed except with the assistance of the rhinoscope. A simpler and a better method, where very little requires to be done, is to pass the finger into the post-nasal space as already described, and if the nail be in good condition rapidly to scrape off any growths which may be felt. This is a good method when we are sure that the amount to be removed is so small that everything can be done without having to introduce the finger a second time. The discomfort of the proceeding to the patient, and the amount of hæmorrhage which follows it, though of short duration, will in most cases prevent the patient from undergoing a second trial, and if all the growths have not been removed the ordeal for the patient will prove to have been useless.

In a very large number of cases a more radical treatment is required, and if it be undertaken the most important point to bear in mind is that *all the growths* must be effectually removed. When this is not done a relapse is almost sure to follow, with its accompanying disappointment. A relapse, when the operation is thorough, is in my experience of extreme rarity. I will shortly describe the method I adopt, but first I must say a word about anæsthesia. Several men have advocated the use of nitrous oxide in all cases of post-nasal growths requiring anæsthesia; this, I think, is a great mistake. Our object being to remove all the growths, I am convinced from experience that the time allowed by nitrous oxide gas is altogether too short. The only thing which can be said in favour of this gas, besides its safety in these cases, is that with it hæmorrhage is certainly less; but under chloroform I have always found that the freer bleeding can be easily controlled. The certainty which we can have that all the growths have been efficiently dealt with far outweighs any

of the inconveniences which accompany or follow the administration of chloroform. But it is essential that the anæsthetic should be entrusted to an experienced administrator; I know of few operations which make a greater claim upon his coolness and skill. It has been advocated by Mr. Edmond Owen and by Mr. Parker that the patient should not be profoundly narcotised, that the laryngeal reflexes should not be abolished, and the reason given for this opinion is that any blood which may find its way into the larynx will be immediately expelled by coughing. I cannot coincide with these views. In Rose's position, which I always adopt, I cannot understand how blood can possibly get into the larynx if we only sponge carefully enough. On the other hand, nothing so impedes the operator or is so dangerous to the patient as reflex vomiting, and in my opinion it is more important to abolish this reflex than to preserve the laryngeal. Perhaps my views on this point have been largely influenced by having had, in nearly all my cases, the advantage of the assistance of such an accomplished anæsthetist as Mr. Piel. He always has kept up the requisite profundity of narcosis without ever giving me any anxiety as to the safety of the patient.

The arrangements we make in one of these cases are as follow:—The patient is allowed no food for five hours at least previous to operation; the table is placed with its head in a good light. When the patient is anæsthetised he is drawn forwards, so that the head hangs well over the end of the table. A towel is bound firmly round the head, below the occiput behind, in front just above the brows. As the head hangs downwards, the blood, which usually pours out of the nostrils, runs down the forehead into the towel, and is thus prevented from matting the hair. In girls especially this is a very necessary precaution. A Fergusson's gag is now placed in the left side of the mouth,

and is managed entirely by the anæsthetist. A well-trained and competent nurse must be close at hand with sponges ready, several small ones being secured on handles; a second nurse is desirable, as the time of one is fully occupied in cleaning the sponges. I have entered rather minutely into details, because it is all-important to have everything at hand and ready, as once the operation is begun there is no time to spare in looking for what may be required.

The operator sits or stands at the head of the table, with his back to the light. The general disposition of operator, anæsthetist and patient in Rose's position, is shown in the photograph. If the tonsils are enlarged, I remove them first. The instrument I now use is the ordinary Luer's guillotine, with the simple modification that the prongs have been removed. My reason for this is that if the tonsil be tough, instead of the barbed prong dragging the tonsil well into the loop of the guillotine, the reverse sometimes takes place, the prong is dragged through the loop by the tonsil, and when the blade is liberated, it slips over the prong and becomes jammed—an accident most aggravating when time is precious, and which requires some ingenuity to overcome. I prefer using this forceps as a substitute; the toothed end is passed through the loop of a guillotine first, and then the tonsil is seized. The loop of the guillotine now is passed down along the closed forceps until it encircles the tonsil. The forceps now draws the tonsil well out of its bed, and then the guillotine is worked slowly, so as to squeeze as much of the root of the tonsil as possible before dividing it. I generally prefer a blunt instrument. I cannot say I care much for Mackenzie's guillotine. It acts more by pushing the pillars of the fauces away from the tonsil, instead of drawing the tonsil out, with the result that a piece of the pillar very frequently slips into the ring, and is snipped off by the blade. This not only makes subsequent deglutition

more painful, but a snipped pillar bleeds more than the entire cut surface of the tonsil. When both tonsils have been removed we need not delay to stop the bleeding, which may at first be brisk. As it collects in the hollow of the palate it can be easily sponged out. I then pass my finger up behind the palate, form a rapid estimate of the position and size of the growths, and then I pass up a Gottstein's curette, which is, I think, the most useful and the most manageable of the innumerable instruments which have been devised. With this instrument I scrape the vault, posterior, and lateral walls of the post-nasal space freely. Occasionally the finger is passed up to ascertain if all the growths have been removed. On a few occasions I have worked with a small curette passed through the nose, and with my finger-nail passed up behind the palate.

Some men endeavour to dispense with curettes and forceps, and to scrape away the growths with the finger-nail. A few small growths can be got rid of in this way; but I am quite satisfied that, in the majority of cases, the unaided finger-nail is not sufficient. I have very good nails, and I do not bite them, still I find they are not capable of doing what a curette can do thoroughly. The artificial finger-nail recommended by Sir William Dalby is a most awkward and unmanageable instrument, and with it the sense of touch is rendered useless. Whilst this process of scraping is going on, bleeding is generally profuse. It is very soon seen to pour out through the nostrils, downwards over the eyes to the forehead, and into the towel, or on to the mackintosh sheet which lies on the floor. As soon as the scraping is completed, I sponge out as much blood as I can, then a retractor is passed through the mouth, so as to draw the uvula and soft palate forwards, and then I proceed to rapidly plug the post-nasal space. The plugs I have already mentioned, covered with the tannic and gallic acid mixture,

are passed along the retractor, and they glide of themselves into the naso-pharynx. With my fingers I press them up into position one after another until the whole space is filled. I find this an admirable plan for arresting the bleeding from the tonsils, as well as from the space above. The strings attached to the plugs are allowed to hang out of the mouth. I now wait for a few minutes, until I have reason to think that the bleeding has stopped, and then I cautiously remove the plugs before the patient is allowed to come from under the anæsthetic. Should any bleeding reappear, a second plugging can be resorted to; but this is seldom necessary, a little oozing is of no consequence. The patient is then put back to bed, turned well over on his side, so as to allow any oozing to escape from the nose and mouth. I have only in one case been obliged to replug the post-nasal space some hours after the patient had recovered consciousness. I found no difficulty in carrying out the method described above.

The after-treatment is of the simplest. I see no advantage in carrying out an elaborate system of nasal douching for weeks afterwards as practised by Meyer and others. If things go on as they generally do, I leave the patient alone, and generally find that he is able to be up and about as usual within a week. For the first three days I keep him in bed, and for a couple of days longer in his room. By that time all soreness has gone, and deglutition has become quite easy.

The after-results are, in a very large number of cases, most satisfactory. The symptoms for which the operation is done disappear; the dull-eyed, vacant-looking boy, with open mouth and impaired hearing and defective speech, becomes, during the course of a year, bright and intelligent. His hearing, if taken in time, becomes keen and his speech good. He keeps his mouth shut if taught to do so, sleeps quietly at night without snoring, and improves in health. It has been estimated that a child who has been stunted by

adenoid vegetations grows twice as much during the year succeeding their removal than he would under ordinary circumstances in the same period, and it has also been estimated that the weight sometimes increases in a year by 30 per cent.

Of course many cases do not show very startling results, but I think I am justified in saying that, taking the cases all round, there are few operations which can show so much after-good to the patients as the removal of adenoid vegetations from the naso-pharynx.

THE PRESIDENT thought that post-nasal growths were just as common among the better class of society as among the poorer. He considered that they were within the compass of every practising surgeon and did not alone belong to a throat specialist. He entirely agreed with the Secretary on the necessity of performing the operation, and disbelieved in any other treatment. He thought Mackenzie's guillotine an excellent instrument and had never injured the pillars of the fauces when using it. Speaking of anæsthetics he considered that there was a necessity for complete anæsthesia, but that a great mortality attended the use of chloroform in this operation. He considered that the remedy for that was Rose's position, with the head hanging over the end of the table, and which was adopted by nearly every surgeon of experience.

MR. WOODS said, with regard to the origin of post-nasal adenoids, that there was a tendency for adenoid tissue to develop in young people. In two cases of his he found that chronic laryngitis had been caused by them, as the air had not been properly warmed by going through the nose. He thought that Lowenberg's forceps had the disadvantage of being rather tedious and requiring two or three doses of the anæsthetic. Latterly he has used a modification of Gottstein's curette. He did not agree with Mr. Franks that the duration of the anæsthesia caused by laughing gas was not long enough. Still he himself preferred chloroform. His plan of operating was to have the chloroform administered till the cornea was anæsthetic, then to force open the mouth and put in a self-retaining gag. He then forced a piece of sponge on a forceps through the nostrils into the pharynx. The use of this was

to open the nose, which, owing to long disease, might not be large enough to admit the air. He never found it necessary to plug the posterior nares. The bleeding, which is at first severe, stops in a few seconds and does not recur. He allows his patients up on the day following the operation, and discharges them on the third day. He had relapses in two cases, which he does not think were due to want of thorough scraping away of the growths. He never saw any good result follow from medical treatment.

MR. DOYLE thought that post-nasal adenoids were accountable for a great many maladies. In operating he adopts Rose's position, and uses a curette placed more at right angles and not so flexible as that used by Mr. Franks.

SURGEON-MAJOR DALY mentioned a case where post-nasal adenoids had been mistaken for worms.

MR. KENDAL FRANKS, replying, had never found it necessary to dilate the nose. When he plugged the posterior nares he always removed the plugs within half a minute to a minute before the patient recovered from the anæsthetic. He considered that it helps to check the hæmorrhage especially as he put tannic acid on the plugs. He does not discharge his patients for a week after the operation. He objected to nitrous oxide gas not only on account of the short time of anæsthesia which it gives, but also because it causes a good deal of jactitation.

APPENDICECTOMY, WITH NOTES OF TWO CASES.

By T. MYLES, F.R.C.S.;

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[Read in the Surgical Section, December 7, 1894.]

As the operation under notice to-night has not, as far as I am aware, been yet the subject of a general discussion at the Section, and as it is a branch of surgery which has made very marked progress in recent years, I venture to bring appendicitis and its operative treatment under your notice, and to add point to my remarks by brief notes of two cases that have recently been under my care.

The first of these cases was that of a soldier at Portobello Barracks whom I was asked to see by Surgeon-Colonel Frazer and Surgeon-Captain Sexton. The man was about to be discharged from the service, invalided in consequence of recurrent attacks of appendicitis, and these gentlemen believed that he might be relieved by an operation. However, as he was to be discharged from the Service in a few days, and would then have no claim to accommodation and treatment in the military hospitals, they wished to hand him over to a civil surgeon instead of undertaking an operation which would necessitate his detention in a military hospital after he had resumed the position and duties of a civilian. The history of his case is as follows:—

CASE I.—J. K., aged twenty-three, soldier, admitted 26th February, states that during October, 1893, he was attacked with sudden and severe pain in the abdomen, most intense below and to the right of the umbilicus; this was accompanied with vomiting, constipation, and distension of abdomen. It lasted two or three days, and gradually subsided.

On October 31st, some days after the first attack, he treated himself to a meal of apples and nuts. This was promptly followed by a recurrence of his ailment in an aggravated form. He now went to hospital, complaining of intense abdominal pain, with distension and constipation. Under treatment these symptoms abated somewhat, but the pain became localised, and a distinct swelling now appeared in the right iliac fossa. This was painted with iodine; low diet, and quiet were prescribed, and his condition gradually improved.

Two months later, being still in hospital, it was thought a more liberal diet might be ventured upon. He eat a hearty dinner of beef and potatoes accordingly, and that night it promptly produced a recurrence of his former symptoms, and in a still more severe form than in any of his previous attacks.

This third attack passed off under treatment, but the swelling in the right iliac fossa was now more defined than it had ever been before. Shortly after this I saw him, and had him admitted to the Richmond Hospital.

On examination, he seemed a strong healthy young man, without any very marked symptoms other than a dull aching pain, with a distinct swelling in the right iliac fossa. This swelling was about two inches long by one inch broad; its long axis was parallel to Poupart's ligament, about an inch above which it lay, immediately outside and partly upon the external iliac artery. It was freely movable, of a solid consistence, and slightly tender to the touch.

On consultation with my colleagues, it was determined to cut down upon it. Accordingly, on the 2nd March, his bowels having been freely moved by an oil draught, supplemented by an enema on the previous evening, I cut down upon it, being assisted by Mr. Thomson, the Vice-President of the College. The incision, two inches long, was made directly over the swelling, and parallel to the fibres of external oblique. The swelling was found to be caused by a thickened, adherent, and sharply curved appendix, covered over by a blanket of adherent omentum.

This last was first secured by four double ligatures and divided between them. The adhesions were then broken down and both appendix and cæcum with some difficulty projected through the wound.

A circular incision was now made through the peritoneal and muscular coat of the appendix and the mucous membrane exposed

as a tube. This latter was now first encircled by a ligature and then divided.

It was next tucked in towards the cæcum and the flap of peritoneum and muscular tunics sutured over it. The abdominal wound was now closed with a double row of sutures, the first set passing through the entire thickness of the parietes, and the second of very fine silk was used to bring about careful approximation of the divided fibres of the external oblique. His subsequent course was uneventful, with one exception.

On the fourth day his temperature rose from 99° to 103° , remained up for three days, and then gradually sank to normal. There was nothing that I could see to account for this, as he had no pain, tenderness, or tympany, and the wound healed very kindly. He had a slight cough but no physical signs of lung trouble.

I presume the explanation is to be found in an attack of mild peritonitis with some slight septic absorption.

He was allowed out on pass on the 17th April, being now quite well, and on the evening of that day returned to the hospital in a state of uproarious intoxication. He was accordingly discharged from the hospital under legal escort.

CASE II. is totally different from that just described.

This patient was a gentleman aged twenty-seven, of very fine physique, and well known in the athletic world. A year before he began to develop pain in his right groin, increased by effort, especially sudden or violent movements. The attacks at first lasted only a few hours, but gradually became more frequent and prolonged. His health began to fail, he became anæmic and wasted, lost all his exuberant energy and spirits. His temperature, however, was normal. He was then under the care of Dr. Usher, of Dundrum, who asked me to see him.

I examined him very carefully and could find nothing to explain the phenomena. His diet was regulated, bowels kept open by a mild mercurial, and he gradually improved and went to the seaside for change of air. For the next six months he was quite free from his symptoms.

Having eaten freely of fruit one day, however, on the ensuing night he had a sharp attack of pain again. This persisted from that date with slight remissions till the date of operation.

On examining him now a distinct swelling in right iliac fossa

was observed, tender to the touch and elongated in shape lying under and parallel to the edge of the right rectus, and extending about two inches outwards. His abdomen was distended, temperature 103° , bowels confined, and all the phenomena of peritonitis were present. Under treatment these subsided, but the swelling did not disappear completely for some time yet, I made a diagnosis of appendicitis and recommended operation.

The patient, however, being now, as he thought, free from pain, resolved to postpone the operation, and endeavoured to resume his duties. He found, however, that he could not do so satisfactorily, as at the most unexpected moments and in the most inconvenient situations, this dreadful pain would attack him. He was compelled to take to his bed again and begun to lose flesh and colour.

On examining him now I could not find any swelling, but the least pressure in the right iliac fossa caused great pain. This pain subsided while he lay in bed, but the resumption of the upright position reproduced it instantly.

He now agreed to the operation, and I had him admitted to the Private Hospital in Charlemont-street.

On the 20th June last, assisted by the President of the College, by Dr. Lennon and my pupil, Mr. Friel, I operated. The abdomen being opened, the appendix was found to be curled up under the cæcum, about five inches in length, quite free from adhesions and apparently perfectly normal. On palpating it, however, some hard sharply defined substances could be felt within; I resolved therefore to amputate it. The method previously described was adopted, but as a further precaution the stump of the appendix was invaginated into the cæcum and the inverted edges of the latter closed by some Lembert sutures. Knowing that my patient was of very athletic habits, and, therefore, very likely to develop a ventral hernia unless precautionary measures were adopted, I closed the parietal wound in the following manner:—

First, four stout quill sutures were passed through the entire thickness of the wall from peritoneum to skin. The purpose of these was to relieve the strain on the other sutures.

The peritoneum and muscular layers were now carefully approximated, by a continuous suture, care being taken not to evert the peritoneum between the muscular layers, but to allow the latter to come into actual apposition, muscle to muscle.

A third row of sutures, also continuous, closed the wound in the external oblique aponeurosis. A fourth suture closed the skin wound. The subsequent course was uneventful. The temperature never rose above normal. The quill sutures, and those in the skin were removed on the 12th day, and on the 15th day he left the hospital for his home in the suburbs. He has never had any of his old pain since. He leads a very active life, in proof of which I may mention the fact that he cycled 72 miles in less than seven hours on the 7th October last, four months after the operation. This I think is a fair test of the success of the treatment.

These two cases, it will be seen, are fair specimens of those cases of appendicitis which offer a favourable field for the surgeon.

In both I was enabled to wait until the acute symptoms had passed away, and the very serious dangers associated with operations performed during an actual attack of peritonitis were thereby avoided. We cannot hope, however, that all the cases of appendicitis coming under notice will be equally favourable, and the operation, when performed, either during an attack of acute peritonitis, or when an appendicular abscess has formed, will make much larger demands upon surgical skill and be associated with a much graver prognosis.

As my personal experience in this branch of surgery is as yet rather limited, I am unwilling to offer an opinion as to the most correct methods of managing those cases in which the appendix may be either gangrenous, perforated, or the centre of suppuration.

There are, doubtless, members of the Section whose experience embraces cases of this type, and I trust they will give us their views on this branch of the subject.

In my opinion, the principal points of interest to the surgeon may be tabulated as follows:—

1. The diagnosis.

2. The determination of those factors in a case that render it suitable for operation.
3. The selection of the time for operation.
4. The method of dealing with the stump after removal of the appendix.
5. The treatment of the parietal wound.

With reference to the first of these, the question of diagnosis is of paramount importance. Although as a general rule the symptoms are fairly clear and distinct, nevertheless we are all of us aware that very diverse conditions have been mistaken for appendicitis.

When we remember that the principal symptoms of this condition are, sudden abdominal pain, finally fixed to the right iliac fossa, vomiting, tympany, tenderness and a localised swelling at the seat of pain, and that these symptoms are present in a variety of other ailments, the difficulty of diagnosis becomes at once apparent.

Experienced men have mistaken for appendicitis cases of intussusception, strangulation by bands, internal hernia, hepatic and renal calculi, rupture of the gall-bladder, acute pyelitis, and in cases where the pus has found its way into the bladder, patients have been sounded for stone again and again. It would take me far beyond the limits of my time or your patience to discuss the interesting and difficult problems involved in the question of diagnosis.

The second question I have tabulated is less complicated and permits greater freedom in expressing one's opinions.

In my opinion, every case of appendicitis in which more than one attack has taken place should be operated on.

Experience has now conclusively demonstrated that the attacks are bound to recur, that the danger steadily increases with the frequency of the attacks, and that a rapidly fatal termination may occur at any moment from the occurrence of perforation, gangrene, or septic infection. On the other

hand, the operation when performed in the quiescent stage following an attack is simple, easy, and safe.

The selection of the time for operation is not always in the hands of the surgeon; when it is, however, there is no difference of opinion amongst operators that the proper time is the stage of quiescence following an acute attack.

When, however, the symptoms are urgent, when we have evidently to deal with an appendix already gangrenous or perforated, the surgeon has no choice but to operate there and then, though he knows that he is opening the abdomen and resecting the intestine at a time when the dangers of shock and septic infection are at their maximum. But he has no choice; he must either operate then, or allow his patient to die without an attempt to relieve him.

The question as to the best method of dealing with the stump of the appendix has created nearly as much discussion as the corresponding problem in connection with hysterectomy.

When the wall of the adjoining cæcum and the base of the appendix are healthy, a circular flap amputation of the latter, dividing the serous and muscular coats low down, peeling up the flap so formed, and subsequently ligaturing and dividing the mucous tube close to its origin from the cæcum, the stump of mucous membrane being now covered with the flap of serous and muscular coats, provides a very efficient method of dealing with it.

This may be supplemented in certain cases by invaginating the entire stump into the cæcum and uniting the edges of the inverted cæcal wall by a few Lembert sutures.

Some operators recommend touching the ends of the mucous tube with either nitric acid or the actual cautery, but the necessity for this I am unable to see. In certain cases, however, the wall of the appendix is so soft that it will not hold either a suture or a ligature; in such a case it must either be clamped with a clip forceps, or the wound

must be tamponed with iodoform gauze. The treatment of the parietal wound is of the greatest importance. Every surgeon who has experience in abdominal work is painfully aware of the frequency with which ventral hernia follows his operations.

Some time ago I was much struck by a suggestion of Mr. M'Ardle's on this subject. He pointed out that the old method of bringing the edges of the wound together *en bloc* was almost always followed by hernial protrusion, and suggested that this could be obviated by careful approximation of the edges of the external oblique aponeurosis by a separate row of sutures. In other words, the aponeurosis of the external oblique, if intact, was a sufficient barrier against a hernia. This suggestion was a very valuable one in my opinion, but it has I think been improved upon by Mr. M'Burney, who has recently recommended the following method in operations outside the middle line of the abdomen : An incision is made through the skin parallel to the direction of the fibres of the internal oblique aponeurosis. These latter are merely separated by a director, not divided or cut with a knife. The edges being retracted, the fibres of the internal oblique and transversalis are brought into view. Their course is practically rectangular to those of the external oblique. The internal oblique and transversalis muscular fibres are now similarly separated, the line of separation being parallel to their fibres, and, therefore, at right angles to the division in the external oblique. The opening in the abdominal wall is now practically a crucial opening. When the appendix is removed, the edges of the wound in the interior oblique and transversalis are first brought together by fine sutures, and afterwards the wound in external oblique is similarly treated. The cicatrices are now at right angles to each other. Moreover, as the fibres have been merely separated parallel to their long axis, not divided,

each contraction of the muscles will only tend to close the opening, not to pull the edges asunder as in the older methods.

This suggestion is of great value, but I fear its applicability will be limited to those cases in which a very small incision will allow the operator all the room he requires.

In cases requiring extensive manipulation a larger opening than this method permits will be required, and in all such cases careful approximation of the different layers of the abdominal wall by separate rows of sutures will be found the most efficient.

In conclusion, I would wish to state that, though I believe many lives will be saved by early operation, I am no advocate of the indiscriminate operations which have been recently recommended by high authorities. When, however, ordinary medical treatment has been fairly tried and has failed to relieve, when the attacks recur with increasing violence, or when there is evidence of either suppuration, gangrene, or perforation, the operation ought, I think, to be performed without delay.

THE PRESIDENT said that accuracy of diagnosis between typhlitis and perityphlitis was extremely difficult. When a diagnosis of appendicitis can be made, he agreed with Mr. Myles as to the propriety of early operation. He had lately seen a case in which, owing to neglect, a pericæcal abscess had formed, which had opened into the patient's bladder. Fortunately the case got well without having to open the peritoneum. With regard to suturing the abdominal wall, he also thought with Mr. Myles that it should be sutured in layers. He thought that the method of opening the abdominal wall by a flap was the best. Ventral hernia was then practically impossible.

MR. M'ARDLE said that an appendicitis which may be very simple to-day may be very serious to-morrow. The moment he knew acute appendicitis was present he would operate. With

regard to the method of dealing with the appendix, he considered that there was no need of ligaturing the mucous membrane. If the peritoneum is sutured over the retracted mucous membrane, all has been done that is necessary. He followed Dr. Smith in making two oblique incisions through the serous membrane, peeling it back and amputating the central portion, consisting of mucous and submucous tissue and then uniting the serous coat by sutures. He agreed with Mr. Myles as to the suturing of the parietal wound in layers. He did not think that the continuous suture was the best. He disagreed with the President about the flap-method. He thought that no skin flap would have any influence in preventing a hernia if the deeper part does not unite early. He thought that the practice of applying clip forceps to the peritoneum was a bad one, and certainly that the peritoneum should not be drawn by them into the abdominal wound, as it caused protrusion of it which prevented the part uniting, and so caused ventral hernia.

MR. TOBIN thought that gouty inflammation occurring in the neighbourhood of the appendix was very liable to be mistaken for appendicitis. Where the symptoms pass away by adopting anti-gouty remedies, he thought that probably the inflammation did not start in the appendix.

DR. A. J. SMITH still adhered to the old method of taking in the entire abdominal wall by interrupted sutures, but was careful to include the aponeurosis, which generally retracts behind the skin and peritoneum in the suture. If he did so he found that ventral hernia did not occur.

MR. CROLY thought that there was great difficulty in the diagnosis between perityphlitis and appendicitis. He mentioned a case which he had been called in to see. From the extreme dislike the patient had to his touching him he considered that suppuration was present, and that it had extended into the abdominal wall. He had no doubt that the inflammation arose from the cæcum. He operated, but before reaching the peritoneum pus came and the case subsequently got well. In another case which he saw there was difficulty in making out whether the patient had typhoid fever or inflammation round the cæcum. In the end an abscess formed which he removed by means of a trocar and cannula.

DR. PARSONS thought that it was not merely a matter of surgical interest. He considered that, even when a person was satisfied as to the diagnosis of appendicitis, still an operation was not always advisable, as 90 per cent. of the cases of appendicitis got well when

treated medically by absolute rest and regulation of the diet. He thought that surgical interference was advisable in any of the three following cases—(1) in cases of recurrent attacks; (2) when there was a local formation of pus; (3) if there was reason to believe that perforation had occurred.

SIR W. STOKES thought the opinion that abdominal pain in the region of the appendix, together with rise of temperature, justified a person opening the abdomen and excising the appendix, an exceedingly dangerous one. With reference to the closing of the abdominal wound he thought that one of the most important things was to fix similar tissues together, and that this could only be done by relays of deep sutures.

MR. MYLES, in replying, did not agree with Mr. M'Ardle about the time the operation should be performed. He thought that when a person was suffering from acute peritonitis that it was a very dangerous time to operate.

ON ONE HUNDRED CONSECUTIVE OPERATIONS FOR SENILE CATARACT, COMPLICATED AND UNCOMPLICATED.

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Surgeon to St. Mark's Ophthalmic Hospital.

[Read in the Section of Surgery, January 4, 1895.]

THIS communication is based on the notes taken of a series of one hundred consecutive cases of cataract extraction, which were under my care in St. Mark's Ophthalmic Hospital during the two years ending October, 1893. It includes all the cases, complicated or uncomplicated, which were operated on by myself, as well as those under my care which were operated on by my colleagues, Dr. Odevaine and Dr. Montgomery, and my brother, Dr. W. G. Story, to whom I am indebted for the collection of the statistics. Traumatic cataracts and juvenile cataracts are not included.

The vision obtained in the whole series of cases was:—

V = $\frac{6}{8}$ in 1 case.

V = $\frac{6}{60}$ in 13 cases.

V = $\frac{6}{9}$ in 8 cases.

No note but "result excellent" in 3 cases.

V = $\frac{6}{12}$ in 12 cases.

V = $\frac{6}{18}$ in 20 cases.

V = fingers at 6 m. in 5 cases.

V = $\frac{6}{24}$ in 18 cases.

V = pl. in 4 cases.

V = $\frac{6}{36}$ in 15 cases.

V = O in 1 case.

According to the customary method of reckoning, the results were successful in 95 out of 100 operations, and of these 87 were complete, and 8 partial successes. The latter, however, should, for reasons which I will adduce later, be regarded as complete successes.

Five failures are recorded, but of these three were due to causes in no wise connected with the operation, so that

the total result of the series is that only two operations, of a series of one hundred, failed to restore useful sight, when the possibility of doing so existed.

Of the eight cases of partial success, three are only excluded from the list of complete successes by the omission of the then house surgeon to record their visual acuity. They left hospital well pleased with the sight regained, but no note was taken except "result excellent." I have written to these patients, but have not been able to find them. (Cases 8, 43, 81).

The other five cases of partial success could all count fingers at 6 m., and although there were optical defects present in some of them to account for vision not being perfect, it is probable that they were prevented from attaining $V = \frac{6}{60}$ more by mental than physical causes. An educated person who counts fingers at 6 m. can, I find, always read Snellen $D=60$ at the same distance.

In these five cases of partial success, vision was rendered imperfect by pre-existing corneal nebula in Case 12, by an opaque capsule susceptible of being divided and having vision thereby improved in Case 75, by iritis with synechia in Case 66, by severe plastic iritis with hypopyon in Case 48. (This patient's eye was perfect on the tenth day, when he was allowed to get up. He utilised the occasion to walk out of hospital and give himself a treat, with the result that he had iritis next day, with hypopyon). Case 79 was 80 years old, illiterate and partially insane. All these five counted fingers at 6 m., and with reasonable intelligence could have read Snellen $D=60$ at the same distance.

In three out of the five failures the subsequent defective sight was not in any wise directly connected with the operation.

Case 15 was found to have the vitreous full of cobweb-like-opacities, completely obscuring the fundus.

Case 44 had extensive detachment of the retina, which was not due to loss of vitreous, for none was lost at the operation, but, perhaps, may have occurred from the lowering of intra-ocular pressure at the operation. This patient's other eye was absolutely blind, with cataract and suspected detachment of retina.

Case 92 was probably one of congenital lamellar cataract, with nystagmus, and no doubt defective retinal function. It would not be included in the series were it not that the patient did not seek advice till the age of 45, and that I consequently performed an ordinary combined operation on the cataract.

It may be asked why these three cases are included in the series at all—why were not three operations performed subsequently on other patients added on to make up the one hundred cases reported in the communication?

One reason for including these three cases is that the complications which interfered with good vision were not all diagnosticated until after the operations had been performed, although in two of the cases they certainly existed previously, and, I think, in any statistics of cataract operations only those cases should be recorded as complicated where the complication is definitely diagnosticated and noted before the operation is performed.

Another and, in this instance, a more cogent reason is that the series includes every cataract operated on, except those which were traumatic, and the juvenile cataracts which were operated on by keratonyxis usually followed by linear extraction.

It will be seen that if these three cases had been omitted, the vision recorded properly in three cases, and reasonable intelligence manifested by five other uneducated patients, the percentage of good results would have been raised to the high figure of 98 per cent—a remarkable figure when it is remembered that all cases, complicated and uncompli-

cated, are included. In fact, useful sight was obtained in every case when the possibility of getting it existed, except in two cases, which two were lost from wound-infection.

Two failures are recorded due to wound-infection.

Case 60 had suffered recently from granular conjunctivitis, but the conjunctival disease was considered cured, and a simple extraction was done a week after admission. Next morning the eye looked all right, free iris, circular pupil. But an acute plastic panophthalmitis came on, and the contents of the globe had finally to be eviscerated. The operation on the second eye was not done till after a preliminary iridectomy, and I had the good fortune to obtain a perfect success— $V = \frac{6}{12}$ in an illiterate patient.

In this case the wound-infection, no doubt, occurred at the time of the operation; in the second case (98) it very probably occurred subsequently, for the patient was detected applying holy water to the eye on the day when the wound-infection was first noticed. It is probable that she had used the holy water previously without being detected, and, unfortunately, we have no authority for including among the virtues of holy water the cardinal surgical virtue of asepsis. The inflammation in this case was plastic or fibrinous rather than suppurative, and annular posterior synechia resulted.

The accidents which occurred during the operations were loss of vitreous four times (Cases 14, 32, 77, and 78). In one of these (32) the lens was luxated, as occurred also in another case (11), in which extraction was done without loss of vitreous.

The iris was wounded by the knife in one case (24), in which also, owing to the unruliness of the patient, the cut-edges of the iris could not be reposed.

In two other cases the reposition of the iris was

imperfect—one (54) a simple extraction, and one (82) a combined operation.

In one case (41) the incision was too small, and had to be enlarged by means of a scissors.

Cortex is noted as being left in the eye in only three cases (11, 23, and 69). In this respect I am convinced the notes are imperfect.

As regards healing of the wound—distinct wound-infection occurred in four cases (Cases 30, 60, 66, and 98). Two of these eyes were saved with a visual acuity in Case 30 of $\frac{6}{18}$, in Case 66 of fingers at 6 m., and the other two are included among the five failures, being the only two failures where success might have been attained.

Iritis is noted as occurring in eleven cases (Nos. 19, 23, 36, 40, 62, 65, 66, 89, 92, 93, 94).

Synechia anterior is noted also in eleven cases (4, 24, 56, 57, 58, 59, 77, 80, 82, 96, 97), of which seven were cases of simple extraction and four cases of extraction combined with iridectomy.

Cystoid cicatrix occurred in two cases (51 and 54), one a combined and one a simple extraction.

A secondary operation was done in nine cases (Nos. 6, 12, 23, 30, 53, 69, 92, 94, 100), and is noted as *necessary* in two other cases (14 and 75), but a higher visual acuity could have been obtained in many other cases by means of a secondary operation, if it had been practicable to keep the patient under treatment for that purpose. In two cases secondary glaucoma came on, one a combined operation (No. 30), and one a simple (No. 100).

The complications observed before operation were chronic conjunctivitis in twenty cases (1, 2, 15, 30, 41, 43, 47, 49, 52, 60, 61, 63, 71, 72, 75, 79, 80, 81, 91, 93), two of which were cases of pronounced trachoma. Most of these cases had to be treated for several weeks in hospital

before an operation could be risked. Some were two or three months under treatment before the operation was done, and several had to have operations performed for malposition of lids before the cataract extraction could be attempted.

Several cases had corneal nebula—one (No. 12) to such an extent as to interfere greatly with vision.

In two cases albuminuria was present (Nos. 20 and 21). Two eyes of the same person. Both did well.

Two of the cataracts were Morgagnian (Nos. 33 and 59).

Marginal blepharitis was present in one case (No. 37).

The lens was dislocated in one case (No. 78), and the power of projection was bad in another (No. 31). Both did well.

The section adopted in all the operations was some modification of the peripheral flap as proposed by de Wecker, and first performed in this country, I believe, by myself in May, 1879. The method, when I advocated it in Dublin in the following year, was not very favourably received by my ophthalmological friends, but since that time I am pleased to observe that they have almost universally adopted it themselves, so that the arguments I then brought forward in its support do not now need repetition.

When I first began to perform it I aimed at making a small conjunctival flap also, but subsequently I gave up the conjunctival flap, and it was not made in any of the cases of the present series.

The conjunctival flap, however, affords such important advantages in an early sealing-up of the incision that I believe I have not done wisely in altogether discarding it, and I am at present making the flap in nearly every operation I perform.

Ophthalmic surgeons are at the present time divided into two camps, a large body of the profession advocating

the merits of the simple operation of cataract extraction without iridectomy, and another, perhaps even larger, body of operators performing the combined operation alone.

This series of cases contains 42 simple operations, 46 combined operations, and 12 operations for cataract after preliminary iridectomy.

The simple operation resulted in three failures, two of which were due to wound-infection (Nos. 60 and 98), and one to opacities in the vitreous. None of the losses were consequently due to the special type of operation, but were the effects of accidental causes common to all operations.

One failure occurred after a preliminary iridectomy; it was due to detachment of the retina, and might have occurred after any other method of operating (No. 44).

One failure occurred after a combined extraction. It was probably the result of congenital defect in visual power (No. 92), and was not in any wise due to the operation.

As far as the percentage of successes is concerned, the results are slightly better in the simple extractions than in those where iridectomy was done. There were in all 58 operations with iridectomy, of which 50 were successes, and 42 simple operations, of which 37 were successes. This gives 86 per cent. of successes in the operation with iridectomy, and 90 per cent. of successes in simple operations.

The average acuity of vision, however, is much higher in the successful simple cases than in the operations with iridectomy. Of the former one case had $V = \frac{6}{6}$, and six $V = \frac{6}{9}$, while only two of the latter reached $\frac{6}{9}$. Briefly, of the simple extractions 23 cases (54 per cent.) had $V = \frac{6}{18}$ and upwards, while of the extractions with iridectomy only 18 cases (31 per cent.) obtained so high a visual acuity.

It may be said that the higher average visual acuity in the simple extractions is due to selection of the cases, and there may be some modicum of truth in the statement,

but I am inclined to attribute it rather to the more satisfactory healing of the operation wound, and the healthier condition of the eye-ball afterwards. The reaction I have observed after a simple extraction is usually less than after a combined operation.

The great bug-bear of the simple operation is prolapse of the iris. This occurred five times (Nos. 33, 38, 42, 54, 100). All the cases were successful; visual acuity being $\frac{6}{60}$, $\frac{6}{36}$, $\frac{6}{18}$, $\frac{6}{12}$, and $\frac{6}{9}$.

The treatment adopted was excision and cauterisation, after which iodoform powder was dusted on the wound. In one of these cases a small cystoid cicatrix resulted, and in another secondary glaucoma, which was cured by sclerotomy with incision through the sphincter of the iris.

The most that can be brought forward against the simple extraction from an examination of the present series of operations is that the convalescence may have been unduly protracted in about 12 per cent. of the cases, against which it may be asserted that the convalescence was more rapid in the remaining 88 per cent. of the operations, and the visual acuity obtained much higher.

It is obvious that these statistics are not brought forward with the object of advocating any particular method of performing the operation of cataract extraction. The only conclusion that can be drawn from them is that success can be obtained by either of the two rival methods, and there does not seem much to choose between the two. This conclusion is really only what anyone who has glanced at the literature of the subject would expect. Operators of immense experience in all quarters of the globe are loud in praises of one or the other method, and I do not think the time has yet arrived when we can come to a final conclusion as to which is the better.

The antiseptic precautions adopted in all the cases were the following:—

The eye to be operated on is kept bandaged with boric acid lotion dressing for twenty-four hours before operating; and the operation is not performed so long as any mucus is present on the dressings.

All the instruments are kept for five minutes in boiling water, with the exception of the knives, which are sterilised by rubbing with a mixture of equal parts ether and absolute alcohol.

The collyria employed are made up with boiled boric acid solution, or with 1 to 5,000 corrosive sublimate solution.

The dressings are made with absorbent wool soaked in boiling boric acid solution.

At the time of the operation the patient's face, eye-brows and lids are washed with creolin, and boiled boric acid lotion is used to wash out the conjunctival sac, both before and during the operation.

That in spite of these precautions, four cases of wound-infection, two of which ended in loss of sight, should have occurred in 100 cases is much to be regretted, but when I consider the material I have to work upon, I am only surprised that I have not had more fatalities.

The larger number of the patients who seek relief at St. Mark's Ophthalmic Hospital are drawn from the poorest classes in the community, and the difficulties of obtaining a healthy conjunctiva before performing an operation are extreme. We send many patients home to have their ophthalmia cured, and when they return months afterwards the ophthalmia is as bad as ever. If we are not to give these patients up entirely and leave them in hopeless blindness, there is nothing for it but to treat the conjunctiva as skilfully and energetically as we can, and when we get it at all in a fairly healthy state run the risks of a cataract extraction.

TABLE of 100 Consecutive Operations for Senile

I. = Compound Operation. S. = Simple Extraction.

No.	No of Card	Age	Side	Vision of other Eye	Complications noted before Operation	Operation	Ir-Idectomy
1	324	75	L	Fing. 4 ^m	Conjctis. chron.; strab. intern	P. I., and in 3 weeks 3 mm.	P.I.
2	383 F	65	L	H. R.	Conjctis. chron.; pterygium	—	I.
3	396	74	R	—	—	3 mm. flap . . .	I.
4	409	62	L	2 ⁶ / ₄	P. I. (4 months), immature	—	P.I.
5	412 F	30	R	5 ^m	—	—	I.
6	419 F	74	R	—	—	—	I.
7	446	60	L	4 ^m	—	—	I.
8	449 F	50	L	—	—	—	I.
9	458 F	30	L	1 ⁶ / ₂	Soft white cat. . .	—	I.
10	459 F	51	L	1 ⁶ / ₈	—	—	I.
11	461	63	L	1 ⁶ / ₈	Cat. immatura . . .	Luxatio lentis; spoon .	I.
12	462	58	L	6 ⁶ / ₆	Nebula corneae cent. .	—	I.
13	463	57	L	Fing.	—	—	I.
14	524	50	R	3 ⁶ / ₆ ?	Probably traumatic origin	Escape of fluid vitreous	I.
15	620	58	L	3 ⁶ / ₆	Conjctis. chron. immature	—	S.
16	583	72	R	1 ⁶ / ₈	Pupil acted sluggishly .	Very small iridectomy .	I.
17	566 } F	50	R	H. R.	—	Morgagnian . . .	I.
18	566 } F	50	L	1 ⁶ / ₈ +	—	Eserin . . .	S.
19	547	75	L	P. L.	—	Morgagnian . . .	I.
20	530 }	50	R	0.5 ^m	Albuminuria; central ulcer	—	S.
21	530 }	50	L	P. L.	Albuminuria; strab. ext.	—	I.
22	541	49	R	6 ⁶ / ₈	—	—	I.
23	535	71	L	3 ^m	Immature . . .	—	I.
24	508 } F	50	R	H. R.	—	Unruly patient; iris cut by knife; reposition afterwards impossible; patient's own efforts expelled lens!	I.
25	508 } F	50	L	1 ⁶ / ₈	—	—	I.
26	500 F	66	R	P. L.	—	—	I.

Cataract, from September, 1891, to April, 1893.

P. I. = Preliminary Iridectomy. F. = Female.

After Treatment and Course	No. of Days after Tested	Correcting Lens	V for Distance	V Near
Did well	13	10	$\frac{6}{60}$	
Did very well	24	10	$\frac{6}{18}$	
Pupil did not dilate well	14	9	$\frac{6}{60}$	
Syn. ant. and cicatrix rather bulging in centre; a year later, V = $\frac{6}{18}$; but right blind with keratit. Punct. and sec. glaucoma	23	11	$\frac{6}{36}$ (Ast. = 8 D)	
Did well	—	12	$\frac{6}{60}$	
After 4 days, chemosis T + 1, and deep ant. ch., keratitis bullosa (needled Jan. '93.)	—	13 and 2 Cy.	$\frac{6}{18}$? ?	Sn. 0.5 Jg. 1
Some capsule left in above	—	10	$\frac{6}{18}$	
12 days after, "all excellent"	—	Result	excellent	
—	—	—	$\frac{6}{12}$? ?	Jg. 1
—	1 year	10	$\frac{6}{12}$? ? ?	
Cortex left in: patient could not count fingers . .	30	11	$\frac{6}{36}$	
After 40 days a needling was done; result perfect, bar nebula	52	10	Fing. 6 ^m	
—	20	10	$\frac{6}{60}$	
Did well, but dense capsule spoiled V.	—	10	$\frac{6}{60}$	
Surgically successful, but result spoiled by staph. post and opacities of vitreous	—	—	P. L.	
—	19	10	$\frac{6}{36}$	
—	42	10	$\frac{6}{18}$	
Tested too soon for good result	11	10	$\frac{6}{24}$	
Healed slowly with <i>syn. post</i>	26	10	$\frac{6}{36}$	
Did well	—	12	$\frac{6}{18}$	
Did well	—	10 and 2 Cy.	$\frac{6}{18}$	
Needling after 35 days; band of capsule? across pupil	—	11	$\frac{6}{36}$	Jg. 4
Had severe iritis; cortex was clear and overlooked at operation	—	10	$\frac{6}{36}$	
Syn. ant. at both ends of wound, as iris could not be well reposed	—	12	$\frac{6}{18}$	Jg. 2
Extraction 3 weeks later; healed without compli- cations	22	12	$\frac{6}{18}$	Jg. 1
—	33	10	$\frac{6}{18}$?	

TABLE of 100 Consecutive Operations for Senile

No.	No. of Card	Age	Side	Vision of other Eye	Complications noted before Operation	Operation	If Iridectomy	
27	500	F	66	L	$\frac{6}{18}$	—	—	I.
28	18	F	30	L	$\frac{6}{6}$	—	Eserin . . .	S.
29	19		38	R	$\frac{6}{9}$	—	Eserin . . .	S.
30	32	F	60	L	3 ^m	Conjctis. chron. and nebula corn.	—	I.
31	49	F	62	L	$\frac{6}{36} +$	Proj. bad below .	—	I.
32	81	} F	64	L	P. L.	Ant. ch. very shallow .	Lens luxated; taken out with spoon	I.
33	81		64	R	P. L.	Morgagnian; pupil does not act	Eserin . . .	S.
34	95	F	42	L	Fing.	—	Eserin . . .	S.
35	115		56	R	2 ^m	—	Eserin . . .	S.
36	126		64	L	$\frac{6}{18} +$	—	—	I.
37	135		57	—	—	M. B. and strabis. extern.	Eserin . . .	S.
38	170	} F	48	R	H. R.	—	Pupil not round. Eserin	S.
39	170		48	L	—	Prel. iridectomy (4 years)	—	P.I.
40	187		60	L	3 ^m	—	—	I.
41	196		74	L	$\frac{6}{9} +$	Conjctis. chron. ; proj. poor	Incision enlarged, scissors	I.
42	214		50	R	4 ^m	—	Eserin . . .	S.
43	234	F	60	R	Fing.	Conjctis. chron. (treated) proj. poor	Nucleus large. Eserin	S.
44	258	F	32	L	O	Cat. immatura; P. I. .	In 3 weeks 3 mm. flap .	P.I.
45	305	}	45	L	H. R.	Cat. hyperm. calc. ; pupil acts badly	—	I.
46	305		45	R	$\frac{6}{60} +$	—	—	I.
47	310		66	L	$\frac{6}{24} ??$	Conjctis. chron. . .	—	I.
48	320		64	L	1.5 ^m	P. I. (40 days) . .	—	P.I.
49	332		64	R	$\frac{6}{9} +$	Conjctis. chronica slight .	—	I.
50	334		52	L	$\frac{6}{36}$	P. I. . . .	In 6 months 3 mm. flap	P.I.
51	346	F	60	R	4 ^m	—	Incision too peripheral .	I.
52	366		50	R	4 ^m	Conjctis. slight and strab. extern.	Eserin . . .	S.
53	367		55	R	$\frac{6}{24}$	—	Eserin . . .	S.
54	379	F	60	L	—	No notes . . .	Iris badly reposed .	S.

Cataract from September, 1891, to April, 1893—con.

After Treatment and Course	No. of Days after tested	Correcting Lens	V for Distance	V Near
Some opacity in pupil	19	10	$\frac{6}{24}$	
Atropin	15	10	$\frac{6}{18}$	Jg. 1
Atropin	33	10	$\frac{6}{9}$?	Jg. 1
Iritis with wound infiltration ; 3 months later got glaucoma, and had iridectomy done	75	13	$\frac{6}{18}$?	
—	20	10	$\frac{6}{24}$?	
In capsule, fluid vitreous lost ; cataract Morgagnian	—	10	$\frac{6}{60}$	
Next day prolapse of iris and vitreous, abscised with loss of fluid vitreous	14	10	$\frac{5}{60}$?	
Atropin	30	9	$\frac{6}{9}$? ? ?	
Atropin ; illiterate patient, hard to test	1 year	+ 3	$\frac{6}{9}$? ? ?	
Iritis ; leeches applied ; chemosis	25	10	$\frac{9}{12}$?	
Atropin	27	11	$\frac{6}{12}$? ?	
Next day prolapse of iris ; abscised	29	10	$\frac{6}{12}$	
Atropin	12	11	$\frac{6}{24}$	
Iritis and chemosis	30	10	$\frac{6}{24}$	
—	—	10	$\frac{6}{24}$?	
Next day prolapse of iris ; left alone for some days, then cauterised	37	11	$\frac{6}{18}$	
Eye healed well	—	—	—	
Healed well, but retina found detached	12	—	H. R.	
—	31	10	$\frac{6}{60}$	
—	12	10	$\frac{6}{18}$	
Slough of vitreous from wound after 5 days ; it was twice removed	18	8	$\frac{6}{60}$	
After 9 days, "perfect ;" patient went out without leave and got plastic iritis with hypopyon	—	10	Fing. 6 ^m	
—	—	11	$\frac{6}{24}$	
Illiterate and hard to test	38	10	$\frac{6}{36}$	
Bulging wound—i.e., cystoid cicatrix, which flat- tened	—	11	$\frac{6}{9}$	
—	25	12	$\frac{6}{12}$?	Jg. 1
Atropin ; after 11 days a needling	19	10	$\frac{6}{6}$?	Jg. 1
Iris prolapsed and afterwards cauterised 4 times ; small cystoid cicatrix resulted	43	9	$\frac{6}{9}$? ? ?	Jg. 1

TABLE of 100 Consecutive Operations for Senile

No.	No. of Card	Age	Side	Vision of other Eye	Complications noted before Operation	Operation	If Iridectomy
55	384	49	L	H. R.	—	Eserin . . .	S.
56	384	49	R	H. R.	—	Incision more central. Eserin	S.
57	404 F	46	R	$\frac{6}{36}$	Cat. immature . .	—	S.
58	441	50	R	$\frac{6}{18}$	—	—	S.
59	458 F	44	L	$\frac{6}{36}$	Ant. ch. shallow .	Morgagnian. Eserin .	S.
60	489	48	L	4.5 ^m	Old granular conjtis. .	—	S.
61	489	48	R	O	Old granular conjtis. .	P. I.; after 30 days 3 mm.	P.I.
62	477 F	75	L	—	—	Eserin . . .	S.
63	487	F 55	L	Fing.	Slight chron. conjtis. .	Eserin . . .	S.
64	487	F 55	R	$\frac{6}{12} +$	—	Eserin . . .	S.
65	496 F	47	R	Fing.	Ant. ch. shallow .	Eserin . . .	S.
66	564 F	47	L	O	Cat. immat.; entropion spast.	—	P.I.
67	575	60	L	$\frac{6}{9} +$	Immature; conjtis. chron.	—	S.
68	508	71	—	—	P. I. had been done .	—	P.I.
69	38	55	R	6 ^m	Dark brown; immature	—	I.
70	96	50	L	3 ^m	Immatura; T — ?	Simple ext. attempted .	I.
71	108	70	R	3 ^m	Conjtis. chron. (3 weeks)	Large nucleus. Eserin	S.
72	111 F	68	L	5 ^m	Conjtis. chron. (11 days)	—	I.
73	113 F	60	R	$\frac{6}{36} +$	—	—	I.
74	125	37	L	H. R.	—	Iridectomy . .	I.
75	131	70	R	$\frac{6}{18}$	Conjtis. chronica .	Morgagnian . .	I.
76	147 F	65	L	6 ^m	—	—	S.
77	160	56	L	$\frac{6}{9} +$	Iridodonesis . .	Simple ext. attempted; loss of vitreous, so spoon used	I.
78	163 F	59	L	$\frac{6}{18}$	Luxatio lentis . .	Lens removed in capsule; spoon	S.
79	164	80	R	Fing.	Conjtis.; right, 30 years blind from injury	Large nucleus . .	S.
80	176	63	R	$\frac{6}{36}$	Conjtis. chron. . .	—	S.
81	204	55	L	P. L.	Conjtis. (49 days) .	On 27th day an iridect.; 49th ext.	. .
82	211	56	L	Fing.	—	Iris badly reposed	I

Cataract, from September, 1891, to April, 1893—con.

After Treatment and Course	No. of Days after Tested	Correcting Lens	V for Distance	V Near
—	26	10	$\frac{6}{18}$	Jg. 1
Synechia anterior	20	10	$\frac{6}{24}$	Jg. 4
Synechia anterior; illiterate	22	10	$\frac{6}{24}$	
Synechia anterior	—	10	$\frac{6}{36}$	
Synechia anterior, slight	14	10	$\frac{6}{18}$	Jg. 4
Plastic iritis; panophthalmitis; evisceration	—	—	O	
Illiterate	19	10	$\frac{6}{12}???$	
Severe iritis; sloughing in wound	—	9 & 5 Cy.	$= \frac{5}{12}??$	Jg. 1
Atropin, neither syn. ant. nor post	31	10	$\frac{6}{12}???$	Jg. 2
Atropin, neither syn. ant. nor post	17	10	$\frac{6}{18}$	Jg. 1
Pupil dilated badly to atropin owing to syn. post	14	10	$\frac{6}{24}$	Jg. 4
Bandage soon left off from entropion, hence iritis, syn. ant. and corneal opacity	—	4	Fing. 6 ^m	
8 days after operation, all well (Dublin)	14	11	$\frac{6}{9}$	
—	—	11	$\frac{6}{36}$	Jg. 6
Wound did not heal quickly; cortex left in caused needling after 47 days	—	—	$\frac{6}{24}$	= Jg. 6
After 2 days = hyphæma; did fairly well. Ast. = 3 D.	18	10	$\frac{6}{36}$	
Atropin; perfect in spite of conjtis. Ast. = 4 D.	13	13	$\frac{6}{24}$	Jg. 1
2 days hyphæma	21	10	$\frac{6}{60}$	Jg. 4
4 days hyphæma; did well	26	10	$\frac{6}{12}?$	Jg. 1
Illiterate	13	10	$\frac{6}{36}$	
During night pulled off bandage; capsule in pupil spoils V.	24	10	F. 5 ^m	
Syn. ant. which disappeared	—	11	$\frac{6}{30}??$	
Syn. ant.	13	3	$\frac{6}{36}$	
Vitreous lost at operation; did well, vitreous hazy on 18th day	18	10	$\frac{6}{60}$	
Wound fistulous for 17 days; illiterate and mad	23	10	F. 6 ^m	
Did well, flat syn. ant.; queer man	9	10	$\frac{6}{60}?$	
Did very well; illiterate. <i>Locum tenens</i> forgot V.	18	11	—	
Did well except for syn. ant.	—	10	$\frac{6}{9}$	Jg. 2

TABLE of 100 Consecutive Operations for Senile

No.	No. of Card	Age	Side	Vision of other Eye	Complications noted before Operation	Operation	If Iridectomy	
83	237	F	44	L	1 ^m	—	—	S.
84	237	F	44	R	$\frac{6}{12} ? +$	—	Eserin . . .	S.
85	285		77	R	Fing.	Pupil acts very sluggishly	—	I.
86	305	F	61	R	$\frac{6}{36}$	—	—	S.
87	358		70	L	$\frac{6}{24} +$	—	No eserin . . .	S.
88	367		80	L	6 ^m	—	—	S.
89	172	F	63	L	$\frac{6}{36}$	—	3 mm. flap (F. O.) .	I.
90	167	M	80	L	P. L.	Ant. ch. very shallow .	3 mm. flap 14 days after preliminary iridectomy	P.I.
91	179	M	58	R	P. L.	Marg. blepharitis and ectropium of lower lid. For the latter Snellen's suture, Kuhnt's excision and Argyll Robertson's operation were all done before it was cured. Chronic catarhal conjunctivitis	3 months after admission	I.
92	278	F	45	L	Fing. 6 ^m	Nystagmus; probably shrunk, overripe lamellar cataract	3 mm. flap; lens had to be extracted in pieces by curette	I.
93	414	F	63	L	Fing.	Chronic conjunctivitis and entropium cauthoplasty; and two and one-half months after admission preliminary iridectomy	1 month later 3 mm. flap	P.I.
94	541	M	50	R	Fing.	—	3 mm. flap. Chlorine water	S.
95	125	M	37	R	H. R.	—	Ant. capsule removed by forceps	I.
96	324	F	70	R	H. R.	—	3 mm. flap . . .	S.
97	324	F	70	L	—	—	3 mm. flap . . .	S.
98	327	F	70	R	H. R.	—	3 mm. flap . . .	S.
99	376	M	56	R	$\frac{6}{9} +$	—	3 mm. flap . . .	S.
100	386	M	73	R	P. L.	Purulent dacryocystitis in left eye	3 mm. flap, and extraction of lens intact; no vitreous was seen to escape	S.

Cataract, from September, 1891, to April, 1893—con.

After Treatment and Course	No. of Days after Tested	Correcting Lens	V for Distance	V Near
Some striped keratitis noted	—	14	$\frac{6}{12}$?	Jg. 4
Atropin	—	14	$\frac{6}{12}$?	
Pupil dilated	15	10	$\frac{6}{60}$	
Pupil dilated badly and slowly to atropin, but no adhesions	30	10	$\frac{6}{36}$?	
Atropin	20	14	$\frac{6}{18}$	
Atropin. Illiterate	16	10	$\frac{6}{24}$	
Slight iritis	25	11	$\frac{6}{24}$	
(F. O.)	25	10	$\frac{6}{24}$	
No ant. ch. for 7 days	26	10	$\frac{6}{60}$	
Iritis and capsular opacity; needling	40	O	P. L.	
Iritis	21	10	$\frac{6}{24}$	Hand Reflex
Slight iritis; capsule divided 3 months later	90	7	$\frac{6}{24}$	
(Montgomery)	30	10	$\frac{6}{36}$	
Slight flat syn. ant.	24	10	$\frac{6}{9}$???	
Slight flat syn. ant.	21	10 3 Cy.	$\frac{6}{18}$	
Chemosis next day and wound infiltration. A fibrinous exudation removed 3 times from wound annular syn. post found and sec. glauc; cut through capsule and iris. This patient was discovered putting holy-water in her eye the third day	—	—	Hand Reflex	
—	14	+ 9 2 Cy.	$\frac{6}{18}$	
Reposition of iris perfect, but patient got ague, and large prolapse occurred. It was twice cauterised. Glaucoma occurred, relieved by incision through hernia into vitreous; glaucoma recurred and was cured by division of sphincter iridis.	—	+ 6 + 5.5 Cy.	$\frac{6}{36}$	

MR. SWANZY thanked Mr. Story for his paper, but thought that as the operations were done by different operators and by different methods, the deductions from the good results would not be so valuable as they otherwise would have been. He thought that cases which were found to be complicated even although they were not diagnosticated before operation should be excluded from the list. It was impossible to diagnosticate certain complications, for instance central choroiditis, before operation. He thought that the cases of wound infection were too many. He had done 270 operations, not taking into account traumatic cataracts, and had had only two cases of suppuration, both of which had occurred in the first 100 cases. The method of antiseptis employed was as follows: The eyelids were everted and the eyes thoroughly washed with 1 in 10,000 corrosive sublimate. Any solutions, as those of atropine or eserine, were made up with the same solution. The instruments were sterilised by boiling, and then put into a bath of weak carbolic lotion from which they were taken. The dressings were also dipped in corrosive sublimate solution and oil silk put over them to prevent them drying. On the whole he preferred not having a conjunctival flap, although he did not think it a matter of much importance. He did not understand what the preliminary iridectomy was done for in 12 of the cases. He never did it except to ripen a cataract. He always used the "combined" in preference to the "simple" operation. In the simple operation you run the risk that the iris may prolapse and become incarcerated in the wound and may give rise to bad results, occurring not only at the time but also at a remote period. In the combined operation the point is to make a narrow and not a wide iridectomy. It is quite sufficient to prevent prolapse of the iris; and it does not interfere with the acuteness of vision as the wide does.

MR. A. H. BENSON also spoke.

MR. STORY, replying, said there were only 6 of the operations not done by himself. If complicated cases which were discovered after operation were not to be taken into account, then cases of wound-infection could be omitted, as it was a complication. The antiseptics employed by Mr. Swanzy were much the same as his except that corrosive sublimate solution was used instead of boiled boric acid solution. Three cases of preliminary iridectomy were done to ripen the cataract. He did not think prolapse of the iris so dangerous a thing as Mr. Swanzy seemed to think, as good results followed in the five cases which had occurred with him.

METHOD OF RESTORING THE LOWER LIP AFTER EXCISION FOR CANCER.

By JOHN V. LENTAIGNE, F.R.C.S.;

Surgeon to the Mater Misericordiæ Hospital.

[Read in the Section of Surgery, January 4, 1895.]

ON three occasions during the last few years I have brought before the surgical section of the Academy of Medicine patients on whom I had performed what I believed to be a perfectly new operation for restoring the lower lip. Many of the members of the section were kind enough to speak in flattering terms of the results of this operation in these cases, and at their request I promised to read a paper describing the procedure adopted. On working up the literature of the subject, quite recently, I was surprised to find that what I had thought to be a new and original operation was nothing of the kind. Although there is no mention of anything like it in any of our English works on operative surgery that I have seen, I find it, or rather one precisely the same in all respects but two rather important details, mentioned in many French books on the subject, where it is described as the "*procédé de Chopart*."

I have now performed the operation in four cases, and it has given such extremely satisfactory results in all of them that I have been puzzled to account for the fact that it should have been unknown to, or been considered unworthy of notice by, the authors of English text books.

I should premise that the operation is suited for those cases only in which the skin of the neck is in a healthy condition, as it is from the under surface of the chin and

the front of the middle of the neck that the flap which forms the new lip in the more advanced cases, or the covering of the chin in the less severe ones, is taken. These parts are, however, almost always healthy in cases of cancer of the lower lip, and it is for the graver and more advanced cases of this comparatively common disease that the operation is particularly suitable.

The "procédé de Chopart" may briefly be described thus:—

Two vertical and parallel incisions are made well outside the diseased tissues, from the free border of the lip down to the lower margin of the jaw bone. The cancerous lip is then dissected off the bone and is cut off in a square piece by a horizontal incision well below the disease. This incision should be parallel to the free border of the lip. The two vertical incisions are then prolonged over the edge of the lower jaw down the front of the neck as far as may be necessary, and the intervening quadrilateral of skin and subcutaneous tissue dissected off the underlying structures, and drawn upwards so that its upper margin comes to the level of the free border of the lip where it is attached by sutures, the head being bent towards the sternum so as to facilitate the traction upwards of the flap and its retention in its proper place without strain.

Although quite unaware that this method had been originated and described by Chopart or any one else before, I employed it almost exactly as I have described above in one case and the result obtained was fairly good. I saw the patient some months afterwards and I could see very little deformity. The upper and inner aspect of the new lip had become covered with mucous membrane; the patient felt comfortable and had a presentable appearance. The lip had, however, contracted a little on its inner or raw aspect, and it was consequently curved in at the top

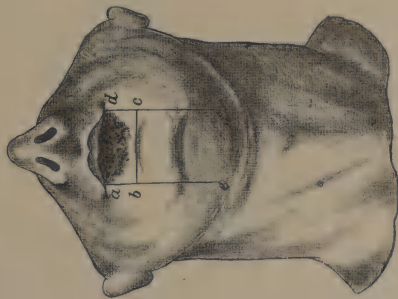


Fig. I.
PROCÉDÉ DE CHOPART.

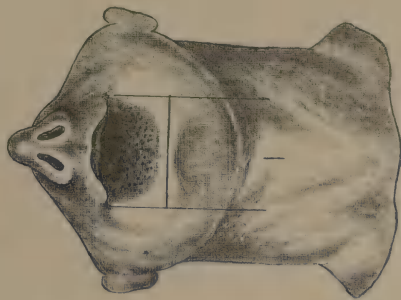


Fig. II.
MR. LENTAIGNE'S MODIFICATION OF
CHOPART'S OPERATION, SHOWING
LINES OF INCISIONS.

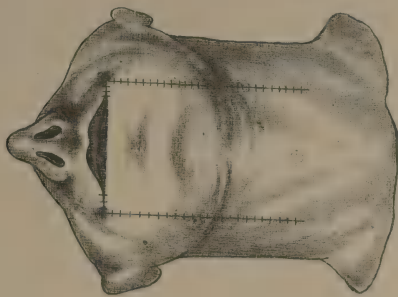


Fig. III.
MR. LENTAIGNE'S MODIFICATION OF
CHOPART'S OPERATION WITH
FLAP IN SITU.

and bulged out a little in the middle. It was a little shorter than normal, allowing the teeth to be seen to some extent. The man could, however, shut his mouth completely and firmly when requested to do so. In another case the disease was more extensive; it involved not only the entire lower lip but also the entire front of the chin. It was a case of recurrent cancer which had been operated on some months before, the new lip having apparently been made by gliding lateral flaps from the cheek on each side. Here it was impossible for me to get a flap anywhere but from the neck, and, moreover, in order to get well outside the disease I found it necessary to begin by making two horizontal incisions, one on each side, extending directly outwards for about half-an-inch from the angle of the mouth on one side and a little less on the other. I then made the vertical incisions as before, except that I began them at the outer ends of the horizontal incisions, thus including not only the entire lower lip but also a considerable amount of tissue outside it. I dissected off all the diseased tissues which fortunately were not adherent by extension of disease to the bone, and I cut off the whole mass in a square piece by a horizontal incision just below the lower margin of the chin. I then prolonged the two vertical incisions down to considerably below the upper border of the thyroid cartilage, and dissected off the flap, which I was able to draw up into position so as to form a new lower lip and covering for the chin without any difficulty. I then fastened the upper border of the flap by three vertical wire sutures to the raw surface outside the upper lip on each side, thus forming a new angle of the mouth on each side, and then secured the lateral margins of the flap *in situ* by a number of wire sutures. While I was making the incisions I cut through an unusually large facial artery on one side, but the hæmorrhage was imme-

diately arrested by forcipressure and ligature. While dissecting off the flap I was able to explore the submental and submaxillary regions in a very effective manner, and I removed several suspicious lymphatic glands, one of which at any rate was undoubtedly cancerous. And before suturing the lip I made a small vertical slit in the flap in the middle line at its base, and inserted a short but wide drainage tube held in position by a wire stitch; this was to allow of drainage from the pouch under the chin. The raw surface of the chin and the inner side of the flap were lightly dusted with iodoform after all hæmorrhage had been checked; and after the sutures were applied the whole chin, lip, cheeks and neck were enveloped in a thick antiseptic dressing, mostly composed of wood-wool wadding, and bandaged so as to exercise a gentle but fairly firm and even pressure on the flap, while the head was flexed well on the neck and fixed in this position by a firm starch bandage.

The case went on extremely well; the flap united by first intention, and the new lip became speedily covered with mucous membrane. I was fortunate enough to have an opportunity of exhibiting this patient here some six months afterwards. There was then no trace of deformity nor any sign of recurrence of disease. The lines of incision were visible, but there was little else to show that the patient had suffered from such a hideous deformity or been subjected to such a severe operation. I have performed this more extensive procedure in two other cases, one of whom I have exhibited here; the other left hospital abruptly about a fortnight after the operation. Both of these cases seemed to be quite as satisfactory as the one I have detailed, but the period of observation did not allow of my forming more definite conclusions as to the ultimate result. I have not seen or heard from either of

them since, and, as one generally hears soon enough from cases that have not done well, I assume that they have probably remained in a satisfactory condition.

I have found this operation so satisfactory that I now venture to recommend its extended application, as there are many cases for which it is, in my opinion, by far the best we have. Indeed, I do not think it is possible by any other means to restore the entire lower lip and soft parts of front of chin with an almost complete absence of deformity. The operation has the merits of simplicity and thoroughness, it allows of an easy and efficient exploration of the submaxillary and submental spaces for the removal of cancerous lymphatic glands, and it allows of a very complete and thorough removal of the diseased tissues, inasmuch as we may make the vertical incisions at any distance from the angle of the mouth that may be considered necessary. I have always tried to leave a quarter of an inch of apparently sound tissue between the line of incision and the unmistakably diseased parts. In none of the four cases mentioned have I found it necessary to interfere with the bone, but if, in any future case, I should have even the slightest reason to think that it might be involved I should, of course, remove the diseased portion; but I cannot as yet form any opinion as to what the result would be in such a case from an æsthetic point of view.

There are some details in connection with the operation which I consider of importance. In the first case, Chopart's operation, pure and simple, the new lip dropped a little during the healing; it was apparently not sufficiently supported *in situ*. This defect is remedied by the modification I have employed, as in the latter the new lip is first fixed to the tissues outside the upper lip by two or three vertical sutures on each side, and if cicatricial contraction should occur in the flap the flexible upper lip follows the

lower so that no deformity is noticeable subsequently. Again the introduction of a drainage tube in the middle line at the lowest point or base of the flap is a matter of importance, as, owing to the situation of the wound, we cannot always count on having a perfectly aseptic course. Much, however, can be done by antiseptic cleansing of the mouth and teeth before operation, by a free use of iodoform, and by using none but wire or silkworm gut sutures; and also by careful after-treatment, the use of liquid food only, antiseptic lotions for mouth; sutures not to be removed for a week or more. It is also absolutely necessary to fix the head in the bent position, with the chin as near the sternum as possible, for the first four or five days, with a starch or other efficient bandage. I also always apply a large pad of antiseptic dressing both under and over the chin and lip, reaching well up to the border of the lip. This dressing has many advantages; it helps to immobilise the parts besides keeping them clean; it also by its elastic pressure facilitates early adhesion of the flap to the front of the chin. After this has taken place no displacement can occur when the patient straightens his head. There is a great deal of loose, superfluous cutaneous and areolar tissue under the chin and on the front of the neck, and in none of the cases I have operated on have the patients felt any trouble or inconvenience in moving the head freely a fortnight after the operation. Even the last case who left so abruptly could move his head freely and with comfort. I have always dissected a liberal flap a little larger than might seem necessary, so as to be able to bring the new lower lip to its position without tension of any kind.

There is necessarily a good deal of hæmorrhage, but this is minimised by the immediate application of forcipressure forceps, which may be left on until the time

comes for applying the sutures. It is then found that only a very few vessels require ligature.

In conclusion, I would wish to remark that though this operation is not as I at first thought a completely novel procedure, it is one which has undeservedly, as I think, fallen into disuse in this country, and which is well worth reviving. It is advisable for us occasionally to reconsider old operative procedures in the light of the improved technique and the consequently better results of modern surgery. Chopart's operation dates from the time when extensive incisions into the cellular tissue of the neck were justly dreaded by operating surgeons—and the results then obtained may not have been satisfactory, as it is essential for the success of this operation that free incisions should be made so as to allow of the flap being drawn up without tension. Only experience can teach us how far the skin of the anterior region of the neck can be effectually displaced and drawn upwards with success and without subsequent inconvenience. But so far I have, at any rate, found it an easy matter to fashion the lower lip from tissues taken from the most prominent parts of the chin and the parts below it.

The PRESIDENT said that he had never seen a better restoration of the lip than the one exhibited here, which was done by Mr. Lentaigue by this method. He would, however, hardly accept it as a universal method. It would not be applicable to persons with a projecting jaw and with a smaller quantity of connective tissue. He thoroughly agreed with Mr. Lentaigue as to the importance of fixing the flap by applying pressure. He would like to know the most suitable material for applying pressure. He thought absorbent cotton the best, as wood wool became dry and hard in 24 hours.

MR. THOMSON thought that where the disease extended well down towards the chin the method would be excellent. He had himself got very good results by using Buchanan's method of two

lateral flaps. He fixed the flaps to the divided soft tissue on the chin with a hair-lip pin, for 4 or 5 days, and had not found it necessary to apply pressure.

MR. KENDAL FRANKS thought that the situation of the scars in Chopart's method would disfigure the patient less than the lateral flap method. In order to keep the parts aseptic he proposed painting over the surface of the new lip with Whitehead's varnish.

MR. F. NIXON thought that one great advantage of the method was that the submaxillary lymphatic glands could be examined.

MR. LENTAIGNE, in reply, said that he did not mean that this operation should supersede all others. It was required only where the whole lower lip was diseased. The material used for dressing was gauze and wood wool, which was changed as soon as it was soaked, and then a flannel bandage with starch, which fixed the part. The incision need not extend much below the border of the chin if the disease was not very extensive. It must in all cases, however, cross the border of the chin in order to get to the flexible skin of the neck. He did not think the results from Buchanan's operation were as good as from this. In Malgaigne's operation the mouth is too small.

INTERNAL STRANGULATION.

By WILLIAM THOMSON, F.R.C.S.;

Surgeon to the Richmond Hospital and Vice-President of the Royal
College of Surgeons.

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By the title of this communication I wish to confine the scope of what I shall have to say to those cases in which nipping or complete strangulation of the intestine within the abdomen has been accomplished. Of course they come under the general description of intestinal obstruction, but although, in symptoms and treatment, these cases must overlap to a certain extent, the larger subject is too wide and complicated to deal with in a single paper.

The causes which lead to this strangulation of the gut are various. Sometimes it is a rent in a membrane through which a knuckle accidentally passes; sometimes the sudden pressure of a Meckel's diverticulum; and sometimes a like force exerted in the same way by a so-called band whose existence has been unsuspected. The process named after Meckel is a relic of foetal life, and passes from the lower part of the ileum to the umbilicus—consequently, it is of considerable length, and when it produces strangulation a long coil is usually affected in more than one point. On the other hand, the bands which have been created by a previous attack of peritonitis are variable in length. I have seen them stretching across the abdomen, between very distant points; and again, so short that they could be discovered with difficulty. In two of the cases which I treated, the ring which was formed was so small that I could hardly

pass my little finger into it. Yet a considerable quantity of intestine had gone through. The part at first must have been very small, and the vermicular action had forced onwards the portion which I found strangulated. That is one of the strange characters of some of these cases; but it is still more curious to note that patients who have such a thing as a Meckel's diverticulum stretched across a great space, and with the intestines closely applied to it, should for so long a period escape the danger of strangulation, and often carry it throughout life without damage.

My experience of cases of strangulation by bands or diverticulum extends to three. The first was a young man, about twenty-two years of age, who was suddenly attacked by violent pain in the abdomen, followed by severe vomiting. Constipation was a prominent symptom, and he was satisfied to trust to domestic remedies, chiefly in the shape of purgatives, before he came to hospital, about two days after the onset of his illness. When he was admitted he was sweating copiously—there was a weak thready pulse, and he was vomiting stercoraceous matter freely. There was very slight tympany. In consultation it was agreed that he was suffering from some form of internal strangulation, and I opened the abdomen without further delay. I at once found a band attached to the umbilical cicatrix and I recognised this as a Meckel's diverticulum. Tracing it down, I found its origin near the termination of the ileum. The intestines which lay under it were very much congested, but far from being in a dangerous condition as regards recovery. I applied two ligatures within about an inch of the ileum, and divided the diverticulum between them, and then applying a ligature near the distal end I severed the connection with the umbilical cicatrix. I did not make any close investigation of the ileum, as the patient was in a very

feeble condition, and he was got to bed as speedily as possible. He rallied considerably; but I was disappointed to find next morning that the vomiting still continued. He was still very weak, and although I considered the question of opening the wound to seek a further cause of obstruction, I thought it not impossible that he was suffering from the vomiting which we sometimes see continuing for some time after the relief of an ordinary strangulated hernia. He, however, sank during the day, and died about 30 hours after operation. At the *post-mortem* examination I found that the diverticulum had been properly divided, but that had I exposed the ileum fully, I should have discovered a state of things which we had not contemplated. The diverticulum had for a very long period pressed upon the ileum close to its termination, and had produced there a chronic and slowly advancing stricture. The diverticulum was adherent to the gut, which, by its continued pressure, it had diminished to the calibre of a quarter of an inch. Had I discovered this at the time of operation, I might have done an enterotomy or enterectomy, with perhaps little chance of success. But the operation was incomplete, and my only excuse is that the patient's condition made me hurry, and that the finding of congested intestines pressed upon by the diverticulum gave us what was deemed a sufficient cause for the symptoms.

The next case was that of a woman who had been under medical treatment for two days. Her symptoms were of the same kind. There was a history of sudden pain, vomiting, and great collapse. When I first saw her she was supposed to be dying, and we agreed that unless some improvement was established by stimulating treatment I should not operate. The opportunity came next morning, when she had rallied somewhat, and I at once

made an exploratory incision, assisted by my colleagues, Mr. Thornley Stoker and the late Mr. Corley. There was great injection of the intestines, which were much inflated. Tracing a coil downwards, my finger was conducted into the mesenteric attachment, where a dense matted structure was found involving a coil of gut. I could not raise it into view, and we agreed that, as the patient was almost moribund, it would be best to make an artificial anus, which I accordingly did at once. There was a copious discharge of fluid fæces, and for a time there seemed some hope of rally, but it was short-lived, and the patient died in about 10 hours. Here it was found that a short thin band stretched across a loop of small intestine. It sprang from a mass of caseous glands, and passing over the intestine was attached to the same mass. Here also there had been long-continued pressure, for the gut bore outside the mark of stricture, and upon opening it I found that my little finger could with difficulty be inserted.

My most recent case was that of a young woman who, on the day before I saw her, was attacked suddenly by acute pain, referred to the umbilical region. She had eaten heartily of bacon and cabbage, and she attributed her pain to that circumstance. She, however, became very ill, vomited copiously, and was unable to move about. On the next morning she was admitted to the Whitworth, where she was seen by Dr. O'Carroll, who recognised the gravity of the case, and had her transferred to the surgical wards at the Richmond. I saw her late at night with Dr. O'Carroll and Mr. Myles. We were unanimous in believing that there was strangulation, and I determined to operate without delay. On opening the abdomen I exposed a large mass of very purple intestine, very tensely distended. Following it in the direction of the gradually-decreasing discoloration, I was at last led to a small coil which was

closely fixed to the right angle of the body of the uterus. I could feel with my finger nail a thin cord, like a piece of tea twine, binding the intestine to the uterus. After considerable difficulty I was able, with the assistance of Mr. Myles, to roll the intestines aside and expose the seat of the constriction. The gut lay under the thin band I had felt. Passing a director between it and the intestine, the snip of a scissors at once freed it, and the uterus sank back into its position. The patient was got back to bed very speedily. Her vomiting continued, and she also gradually sank and died on the day after operation. The *post mortem* showed about two feet of intestine to be almost black, but recoverable. The stump of the band was found on the uterus, but we could not satisfactorily determine the attachment of the other end.

I have not attempted to trouble you with full clinical details but rather to give such a sketch of these cases as will serve for what I hope will be instructive discussion. I grieve to say that while diagnosis was correct, the results were uniformly fatal, and that they thus go to swell the list of unsuccessful laparotomies for intestinal strangulation.

One point I may call attention to, and that is the fact that in two of the cases there had been a gradual approach, apparently through many years, to the eventual crisis of strangulation. Here the mere relief of the constricting bands would have been insufficient, and only two courses were open—the resection of the stricture, or the creation of an artificial anus. Even had I been aware of the existence of a chronic stricture I should certainly not have attempted a resection, because the patients would probably have died upon the table. The only course that gave a gleam of hope was the making of an artificial anus.

The reported cases of internal strangulation are some of the saddest in surgery. We have a mortality ranging up

to 70 per cent. In one group of records which I looked at I found that of some thirty-five published by English surgeons, only about five patients survived. It is true that that was printed some years ago, but still at a time when opening the abdomen for various surgical affections had well advanced our knowledge of successful treatment. Yet the dismal work still goes on, without much improvement in results; and, although there are successful cases, they are still in the minority. Why does this fatality dog our steps? Why is it that we regard a strangulation of intestine, in the ordinary cases of hernia, as almost certain to be successfully relieved by the surgeon; and why do we find strangulation of the same intestine within the abdomen so uniformly unsuccessful? These are questions which demand an answer, and that may be found in a short consideration of the two groups of cases.

It is quite clear that deaths do not result from want of cleanliness. The cases do not survive long enough to allow of the development of septicæmia; indeed they are already dying when we see them. That is in itself a sufficiently bad condition for successful work. The prominent symptom is shock, which is established immediately after the strangulation takes place; and, as a result, the whole of the vital forces are lowered. In addition to this, the extent of intestine which suffers indirectly from strangulation is frequently great. The peritoneum is soon in a state of inflammation, and thus we have present at the time we operate two of the gravest conditions with which we have to combat, shock and peritonitis. On the other hand, in hernia, we have most frequently a strangulation of a portion of gut which has been long accustomed to protrude and to undergo varying degrees of pressure—educated, if I may so term it, to tolerate with less resentment the severer constriction which may some day or other

be developed. We see this in our practice. We know that a suddenly-developed hernia, which becomes strangulated, is a much more serious and dangerous case to face than one in which the patient has been carrying his hernia for many years. And this fact is further of importance in accounting for the few cases of hernia in which we see peritonitis spreading from the nipped portion of the intestine. The peritoneum covering it has been long used to a constant slight irritation by alternate protrusion and reduction, perhaps many times in the day, until at last it is not very easy to rouse it into angry inflammation.

A study of these cases brings into prominence the great importance of early diagnosis and early treatment. Here we are met with the greatest difficulty. Very seldom does the patient come direct to a surgeon. He is seen by a medical man, who is not to be blamed if he does not at once recognise the gravity of the case. Even if he does appreciate this, time is lost before additional help can be obtained. But the primary misfortune is, that some of the symptoms are common to more favourable cases of obstruction, and it is not always easy to disentangle the threads of the puzzle. Vomiting, pain, complete obstruction, and even collapse, are met with in cases of a different class—cases which are sometimes treated successfully by less serious methods than laparotomy. What we must try to do is to fix attention upon any symptoms which, by their severity or their order of appearance, help to indicate what has happened.

Now, I think, the history of the occurrence of pain is of great importance. It is always sudden and severe. The patient not infrequently has been straining at some labour when pain of an acute kind, sometimes at once agonising, occurs in the abdomen in the region of the umbilicus. This pain is steady and continuous, and, in my experience,

does not diminish unless towards the close of the case. The pain produced by a twist differs from this. It is not continuous in severity, but comes on in paroxysms. Moreover, there is this further point to be noted, that in the strangulation by bands there is no desire to go to stool; in volvulus there is.

The second symptom which I think of importance is the collapse. This is very rapidly declared. The patient is pale and pinched; the pulse is thready and rapid; the body often covered with clammy sweat. In other instances I have seen collapse also, but it has been much later in its appearance, and has been due to some added complication, such as ulceration or extravasation of fæcal matter into the peritoneal cavity.

Upon these two symptoms I would place most reliance. It is of no practical importance whether we can diagnose between a strangulation by bands, or a volvulus, or the protrusion of intestine through a hole in the mesentery or elsewhere. The matter to be determined is whether there is a strangulation or not, for if there is the only question to be then settled is the treatment.

Now upon this part of my subject there is very little to be said, but it must be clear and emphatic. There is only one course to be followed, and that is to perform laparotomy. Everything else only increases the great risk which the patient already runs. Between operation with a chance of life, and no operation with certain death, there is no middle way. To narcotise our patient with morphia until he assents to our suggestion that he suffers less pain; to pump quarts of fluid into his rectum and colon in the hope of stirring up the intestines to action, while, in truth, we are only increasing the strangulation—these and the other modes of medicinal treatment are worse than useless; they only hasten the fatal ending.

The subject is not by any means exhausted in the remarks which I have made, but I have already almost exhausted the limits of my time, and I cannot weary you with much more. As to the operation, I only desire to say that *speed* is of the utmost consequence. This will be admitted when we consider the prostrate condition in which these patients almost invariably are. Here we are met by the further difficulty that the cause of the strangulation cannot usually be determined without a rather prolonged search. The introduction of the hand among the intestines inflamed as they are, and the existence of peritonitis, adds greatly to the shock already existing. It is of importance, therefore, to get to the seat of obstruction at once.

Shortly, there are two ways in which this may be done—one is by a systematic examination of the cæcum, the ascending, transverse, and descending colon, and then of the small intestine, in this way determining the portion at which distended and collapsed bowel meet. That is, of course, the part to deal with. The other is the suggestion of Mr. Greig Smith, and it has the advantage of causing less disturbance. He says—"I believe the best means of reaching the seat of constriction will be by inspection of the bowel presenting at the wound. There is a high probability, wherever the cause lie, that the most dilated coils will rise nearest to the surface; and the greater amount of bowel being within three inches of the umbilicus, there is a further probability that the most dilated coils will be within sight. Very gently they may be moved—first on one side, then on the other, as well as upwards and downwards. The most dilated portion which will be also the most congested, or not far off it, is fixed upon and followed in the direction of increasing distension and congestion, wherever that may lead. It will certainly

lead to the stricture. The whole manipulation may be carried out with two fingers."

That proceeding should first be adopted, and if it fails, we have still left the more serious plan of introducing the hand for more elaborate search. Even this may not succeed, and it may be necessary to allow the intestines to escape, but it should be resorted to only in the last extremity ; and if the patient is seriously collapsed, in my opinion it would be a wiser course to make an artificial anus.

I feel that it is not very exhilarating to relate the story of three fatal cases ; nevertheless, I think it is my duty to do so, in the hope that calm consideration of them may enable us to draw some beneficial lessons. I have learned, at all events, that it is desirable if possible to see, and not only to feel, the obstructing band ; and further, to inspect the bowel itself and judge whether by a chronic constriction it has not been so altered as to render it functionally useless. I have tried, further, to concentrate attention upon certain symptoms which I think are of great use in helping us to a diagnosis in a group of cases which are in many senses characterised by great obscurity.

Looking back upon these cases, I do not feel that my operations were inefficiently performed, or that the proper steps were not taken. I take what satisfaction there is in that view. Now-a-days, when one hears of long series of ovariectomies without a death, the surgeon who is unfortunate enough to have such cases as I have been considering, is apt to be unduly depressed by the misfortunes he has encountered. Yet the conditions are very different. It is one thing to remove a tumour from the abdomen, with a quiet peritoneum, to select your own day, and generally to make your preparations with comfortable deliberation, and then to pile up statistics of triumphs, which, limited practically to one and the simplest class of cases, are put

forward as a suggestion that like success may be predicted of everything the operator might do in the same region. But it is quite another thing to take the rough with the smooth—to operate at a moment's notice when there is every combination opposed to a favourable result—the furor of peritonitis, profound shock, and the hovering of death. Here are sufficient tests of one's courage, and coolness, and prompt judgment, and resource. True, our averages would be better if we did not touch the cases; perhaps our reputation as successful laparotomists would spread advantageously; but when they come to us we must, at any cost to ourselves, do the thing that alone gives a hope of relief.

The PRESIDENT thought some of the questions raised by Mr. Thomson were of particular interest. In hospital cases he thought the answer to the question of why operations of this class were so fatal, was that poor people came to hospital after delay which would not be likely to occur among the better classes. With regard to shock, the only cases of rapid death in inguinal hernia were in young people. The tender young peritoneum is more susceptible of injury than an indurated peritoneum in an old person, and with an old hernia. He thought the quotation from Mr. Greig Smith savoured too much of book surgery. Usually, in these cases, there is far less risk to the patient by making a free incision, and allowing the distended bowels to escape on to the surface of the abdomen, than by making a small incision, introducing two fingers, and exploring the intestines, when they crackle and bleed when the least force is applied to them.

MR. BALL said he would confine his remarks to the difference between the operation for strangulated hernia and for internal strangulation. As regards fatality, a great deal depended on the amount of distension of the bowel. In internal strangulation there was very extensive meteorism if it has lasted for any time. The fatal results were due a good deal to the great difficulty in returning the intestines. In strangulated hernia, on the other hand, the cases are operated on before the meteorism is so extensive. He thought

Mr. Greig Smith's idea of not trying at first to find out where the obstruction was, was a very good one. After making a small incision in the abdominal wall, the intestines were punctured and the flatus allowed to escape. The immediate danger was over and the operation could be afterwards proceeded with, with more chance of success. He had had a case which showed this—a man with extreme meteorism, vomiting and collapse. To Mr. Ball it appeared absolutely certain that if an extensive search was made the man would die within 12 hours. A small incision, 1 to 1½ inches long, was made *above* the umbilicus. One finger was introduced, but the intestine was so distended that it could not be pinched up. Trying to grasp it with a forceps tore it and the gas escaped, partly into the peritoneum, partly externally. This reduced the tension. A little bit of the intestine, which was the transverse colon, including the part punctured, was sutured to the abdominal wall, and a drainage tube inserted. Gas in great quantities came through, and, subsequently, thin fæces. Next day all the prominent symptoms were relieved. The tube was kept in for some days. The relief of the tension allowed the obstruction to be relieved, and the bowels moved after a few days. The fistula was closed, and the patient got well.

MR. LENTAIGNE thought that Mr. Ball's case was not analagous to Mr. Thomson's; it was obstruction to the large intestine, and not nearly so dangerous. He agreed with what Mr. Thomson had said. He had seen several cases, more or less similar, in some of which the intestines were punctured and the flatus let out, and still a bad result followed; except in two, which were not quite of the same kind as Mr. Thomson's, and they were both operated on at the very commencement. One reason why the cases of strangulated hernia did so much better was because they were brought at once to the surgeon, while those of internal strangulation were usually kept under treatment by the physician for too long a period before being handed over to the surgeon.

DR. PARSONS thought that the reason cases of strangulated hernia did so much better than those of internal strangulation was because they were diagnosticated at once. The diagnosis of the latter is very difficult. When house surgeon at Sir P. Dun's Hospital he saw a case of a boy, sixteen years old. On Saturday he was perfectly well till 12 o'clock, when he was seized with sudden pain. He was ordered castor oil and poultices. The following evening he came to hospital with a good deal of pain all over the abdomen. No distension or

diminution of hepatic dulness; no desire to go to stool; no fæcal vomiting. He vomited some milk given to him. He thought it was a case of peritonitis. In four or five hours the boy got worse, and he sent for Dr. Smith, who also thought it was peritonitis. The boy died at 9 the following morning; and, *post mortem*, on opening the abdomen a quantity of blood-stained serum escaped, and 18 inches of the small intestine were found intensely strangulated. He thought that in strangulation involving the small intestine, there was not much distension, as they died too rapidly, contrasting with those of the large intestine, where the symptoms are not so acute, and where there is more distension. If, after a patient is suddenly seized with pain in the abdomen, the pulse steadily and rapidly increases, he thought the abdomen should be opened.

MR. CHANCE did not share Mr. Ball's view that distension of the abdomen was a bad sign. The higher the strangulation occurred in the gut the more the shock and the less the distension. Some people thought that bacteria develop highly poisonous substances, which have a large share in the production of the collapse which follows intestinal obstruction, and, therefore, that the intestine should be washed out. He would make a small incision, suture the intestine to the abdominal wall, and wash it out. This could be done in bed, and so would avoid the shock caused by bringing patient to a theatre which there might not have been time to warm.

MR. BENNETT thought that the question of dealing with the distended abdomen was the most important. If the distended intestines are allowed to escape, there will be great difficulty in returning them. In a tympanitic case he would prefer making a small incision, sufficient to admit a couple of fingers, then if he found the obstruction, well and good; but if not, he would make a small incision in the intestines. If they let out the intestines before puncturing them there was very little tendency for the gas to escape after incision, because the intra-abdominal pressure was gone. As far as his experience went he would avoid allowing the intestines to escape, as the result was fatal in the cases in which he did it.

MR. CROLY said he had met with collapse so often in ordinary strangulated hernia that he thought it one of the commonest causes of death in these cases. In cases of internal strangulation or strangulated hernia if an operation is not done early it should not be done at all. If the puncturing system is so successful why not puncture with a needle without opening the abdomen at all? If puncturing meant waiting he would rather see what was going on

inside the abdomen instead of puncturing in the dark. In illustration he would ask, if called to see a man strangling himself with a rope, whether he would first set up artificial respiration or remove the rope?

MR. MYLES said he had the opportunity of assisting Mr. Thomson in one of the cases. He was struck by two features in the cases—one, the smallness of the band causing the obstruction; the other, the comparative absence of tympany. He thought that having once opened the abdomen, and if tense allowed the gas to escape by making a small incision in the gut—a trocar was no use—that a systematic search should be made for the site of the obstruction, and that it should not stop till this had been found. He thought it would be wrong to leave intestine uninspected which might become gangrenous.

MR. NIXON, referring to Mr. Ball's case, said he understood that puncturing the intestine was only a preliminary step, and that when patient had rallied he meant to search for the constriction. The patient got well without this. He, himself, had seen two cases in which definite symptoms of intestinal obstruction were present, but in which the patients declined laparotomy. The symptoms subsided and they got well. He thought the difference between the results of intestinal strangulation and strangulated hernia was due to the difference in the amount of peritoneum involved.

MR. THOMSON, replying, said that Mr. Ball's case had not been of the same kind as his, as the result showed. If the gut had been strangulated the patient would not have had the ordinary passage of faecal matter restored, but an artificial anus would have resulted. In suitable cases he thought it good treatment, and he had adopted it in one of his own cases; but in strangulation a secondary operation would be necessary for relief of it. He wished to impress upon them the distinction between acute obstruction and internal strangulation; the former might recover by medical treatment, the latter never could. Tympany was not an early symptom; it was not coincident with the pain and collapse. When distended, he thought that if necessary the intestine should be opened, but in his cases there was no great distension. The danger of letting the intestines outside the abdomen and the trouble of getting them back could not be exaggerated. The behaviour of the intestines was entirely different when dealing with a solid tumour of the uterus or ovary; there the intestines were collapsed, and in most cases did not tend to protrude.

A NEW OPERATION FOR THE CURE OF ROTATION INWARD OF THE ENTIRE LIMB, AFTER AGGRAVATED EQUINO - VARUS ; WITH AN ATTEMPT TO EXPLAIN THE ANATOMY AND ÆTIOLOGY OF THE DISTORTION.

By R. L. SWAN, F.R.C.S. ;

Surgeon to Dr. Steevens' and the Orthopædic Hospitals, Dublin.

[Read in the Section of Surgery, March 15, 1895.]

THERE are certain deformities which are a common sequence to the cure (so far as the foot is concerned) of advanced conditions of equino-varus, which are unobserved during the existence of the greater malformation. Those are genu valgum, and a rotation inward of the foot and lower part of the limb.

Genu valgum.—This condition seems to be the result of an imperfect development of the structures composing the post-axial line of the leg, combined with the fact that the line of axis of the body-weight is external to the vertical centre line of the limb. The deformity, however, is not altogether derived from the mechanical force alluded to, as it is frequently seen in young children, the subject of a very moderate degree of equino-varus, and it varies considerably in amount. No further allusion to this subject is necessary; it may be dealt with by any ordinary surgical method.

Rotation inward of the limb.—This is a sequence of very great importance, as can easily be shown. A child who has had equino-varus, and has been so far cured that the foot rests normally on the ground, is notwithstanding still found to be the subject of a disfigurement. When walking, the

limb is rotated inwards, and the foot, although plantigrade, is inverted. The advancing foot is carried forward on the dorsum of its opposite, or against the tendo-Achillis of the other leg. It will be observed that voluntary efforts of the child will have little real influence on this deformity. The apparent improvement in position is produced by a rotation outward of the entire limb; and is produced by an effort of the external rotator muscles of the hip. The entire limb is consequently turned outwards in an unnatural manner. The patella, instead of occupying its normal position in front, looks outwards, and, in short, one deformity is induced in order to correct another. The action of the limb is therefore constrained and awkward, and its movements quite different from the unrestrained and graceful actions with which the limbs of healthy children are endowed. Fatigue soon ensues, and the power of locomotion is limited. These results arise from the waste of muscular force employed in the maintenance of such a posture. A careful study of the limb will afford us a knowledge of the real conditions which induce the inversion of the foot, and the true method of dealing with such a deformity.

If we put the patient on his back and adjust the limbs so that the patella will lie directly in front, we see that the factors of foot-inversion commence below the knee. The tibia is in its normal position, but the lower extremity of the fibula is deflected forward, and is, indeed, considerably in front of the position which it should normally occupy. This can be estimated by either comparing the situation of the bone in such a case with that in a healthy child, or with the fibula of the other leg in the case of single equino-varus. Sometimes it will be seen that the lower extremity of the fibula is less prolonged than in the normal state. If we examine the osteological

anatomy of the leg and foot in the order Primates, we find that in man—in the ordinary standing position—the entire outer edge of the plantar surface is applied to the ground; the inner edge by the extremities separated by an arch. The tibia and fibula are well prolonged on either side of the astragalus, and the axis of the foot is at right angles to the axis of the leg.

In the orang-outang, and in a varying degree in all the monkeys, the free mobility of the navicular and cuboid bones on the astragalus and calcaneum causes the foot of the orang-outang to be set very obliquely on the leg, so that when placed on a level surface the fibular border only rests on the ground, and the sole is directed inwards. This, of course, suits well for grasping vertical boughs of trees, but is ill adapted for walking. In addition, we find that the malleoli do not descend to buttress the ankle-joint, as in man, but terminate on a higher plane. This allows of greater mobility to the grasping foot. It will also be found that the lower extremity of the fibula occupies a position in the quadrumana anterior to that normally enjoyed by developed man. This was strikingly exemplified in the dissection of the hinder extremity of a chimpanzee, which was placed at my disposal for the purpose of such examination by Professor A. Fraser, R.C.S. We must regard, then, the deformity above alluded to as, indifferently, an arrest of development or atavism, and, occurring in conjunction with equino-varus, as an analogue to that natural condition contributing to functional efficiency in the anthropoid ape.

Many methods have heretofore been adopted for the rectification of this deformity. It is at the present time very usual to witness an unfortunate child loaded with steels, attached above the hips to a pelvic band, for the purpose of everting the feet. Dr. Doyle, Syracuse city, U.S.A.,

devised an ingenious spiral spring arrangement for the same purpose. The influences of suggestion and education have been relied on to effect rectification as the child grows older, but, as already stated, with ineffectual result. With reference to mechanical appliances it may shortly be affirmed, that they conceal one deformity by producing a less obvious one, that they render a child's life miserable, and injure health by restricting active movements, and, in addition, they are costly, and a source of incessant worry from repeated breakages.

Having deliberated on the subject for a long period, it struck me that a rectification of the distortion could be arrived at by an osteotomy and a rotation outwards of the lower part of the limb. I at first intended to select the femur—being a single bone—as most suitable for division. But I had not then mastered the real conditions. My friend and colleague, Mr. Arthur Chance, pointed out that I would by such a procedure introduce a deformity of the knee by everting the patella. At once perceiving the truth of this remark I abandoned the idea. Subsequently perceiving the true method of dealing with the deformity, I adopted it. At the junction of the middle and lower third of the tibia a point is taken at which the tibia is carefully divided transversely. The section must be complete, as, obviously, a greenstick fracture, which is not unlikely to occur in such cases, will not suffice. The fibula must be left intact, and considerable care must be taken to obtain this result, as a slight amount of strain is sufficient to fracture it. The two segments of the tibia are then firmly grasped, and the lower one rotated outwards. This carries with it the foot and the fibula. It will now be found that the external malleolus will lie considerably behind its former position, and the foot, according to the amount of rotation employed, will be

straight or everted. In those days of rigid surgical cleanliness, the patient, after such an operation, should suffer neither pain nor even inconvenience, and in a short time will be running about with symmetrical and unfettered limbs. I have operated on many dozens of cases by this method, and in the great majority of cases of aggravated equino-varus I believe it will be found a satisfactory and necessary proceeding.

THE PRESIDENT, commenting on Mr. Swan's paper, thought that his theory of a descent back into lower forms of animal life very interesting and quite in conformity with the explanation of many deformities.

VARICOCELE, NÆVUS, AND VARICOSE VEINS OF THE LEG TREATED BY THE METHOD OF SUTURE.

BY CHARLES B. BALL, M.Ch., F.R.C.S.;

Surgeon to Sir Patrick Dun's Hospital.

[Read in the Surgical Section, March 15, 1895.]

THE arrest of bleeding by stitching the cut surfaces together dates back to a very remote period of surgical history. The introduction of the more direct methods, however, such as ligature, &c., appears so completely to have usurped the surgical mind, that but little was heard for a long time of the introduction of sutures solely for the suppression of hæmorrhage. One notable exception, however, exists. In wounds of the lips, either from injury, or from the operations for hare-lip and epithelioma, the universal practice has been to rely on the sutures for the arrest of bleeding from the coronary arteries; but in almost all other cases reliance was placed on ligatures applied directly to the arteries, and sutures were only used for the purpose of coaptation of the edges of the wound. Quite insensibly, however, the progress of modern surgery has shown how much can be done to dispense with the direct ligation of vessels of moderate size and substitute a system of deep sutures for the arrest of bleeding. It appears astonishing that with the good results universally obtained in wounds of the lip so constantly before us, we should have been so long in adapting this principle of treatment to other cases. The contrast between an excision of the breast twenty-five years ago and to-day illustrates very clearly the advantages of this method. Formerly, when a cancer of the breast was removed, all bleeding points were ligatured (often

ten or twelve), the wound was brought together with a few points of interrupted suture passed only through the skin, and very explicit instructions were given to avoid anything like tension on the sides of the wound. The result was the formation of an extensive blood-clot in the wound, a copious blood-staining of the dressings; while severe intermediary hæmorrhage was not infrequent. Now, by pressure-forceps, bleeding is temporarily arrested, and, subsequently, a series of deep sutures, so as effectually to close the wound cavity, permanently arrests further hæmorrhage. In my own practice I rarely ever apply any ligature whatever in excision of the breast; four or five deep sutures are passed entirely under the wound cavity, and, before closing these, the edges are brought accurately together by a fine continuous suture, no drainage-tube being used; the deep sutures are now firmly closed over lead plates and, usually, bleeding is absolutely stopped; if hæmorrhage still continues from any point, an additional deep suture will usually make the wound absolutely dry. The result is that there is, practically, no bloody serum discharged from the wound, and the original dressings can be left undisturbed for many days. In amputations, also, only the very largest arteries are ligatured, complete coaptation of the surfaces effectually stopping all minor bleeding. In Whitehead's operation for piles, reliance is altogether placed on sutures for the arrest of hæmorrhage from the very vascular surface left by the excision of the "pile area," with the result that, if properly done, after-bleeding occurs much less frequently than after the other operations; indeed, it is quite usual to find that the pad of dressing applied to the anus is scarcely blood-stained after twenty-four hours. What, then, are the manifest advantages of this system over the plan of applying ligatures to every bleeding point? Decreased hæmorrhage from weeping of the cut surfaces; no wound cavities which require to be drained, and in which

blood-clots can accumulate ; and no ligatured ends of vessels to necrose, or foreign bodies in the shape of ligatures. In a perfectly aseptic wound no doubt a limited quantity of necrotic tissue, blood-clot, or ligature material can be absorbed ; but the difficulty of maintaining asepsis may be said to increase directly with the quantity of such material in the wound. The less there is, the more certain and rapid is the healing.

This system of wound treatment appears to be capable of considerable development, and suggests many problems of much interest to discuss. I propose to consider three operations in which it appears to me an extension of this method constitutes a very considerable improvement in the operative detail. They are : varicocele, nævus, and varicose veins in the leg.

I take it as admitted that the subcutaneous operations for varicocele are obsolete, and that the only one now claiming attention is the excision of the mass of veins. Upon exposing the spermatic cord in an extensive case of varicocele, the veins forming the pampiniform plexus are found widely dilated and tolerably adherent together, so that, although difficult to separate from one another, they can easily be isolated *en bloc* from the vas deferens. We were formerly told that the spermatic artery could readily be separated with the vas from the mass of veins. Mr. Treves has, however, shown that the spermatic artery is more closely related to the mass of veins than it is to the vas deferens, so that, in all probability, in the majority of cases of this operation, the spermatic artery suffers occlusion. This, however, does not appear to be a matter of much importance as the deferential artery, which closely adheres to the vas, inosculates freely with the branches of the spermatic artery over the epididymis, and is quite sufficient to maintain the circulation. There can also be seen a plexus of minute veins accompanying the deferential artery and surrounding the vas, which are

not dilated, and which belong to a system quite separate from the spermatic. This deferential vascular system appears to be quite competent to completely carry on the testicular circulation when the spermatic artery and veins are thoroughly excised; and it is obvious that by thus transferring the circulation to another and undiseased system, complete and permanent cure is probable. A single case of sloughing of the testis is recorded, but, as it is an isolated example, it does not carry much weight. The way in which I now operate is as follows: An incision $1\frac{1}{2}$ inches long is made through all the covering of the cord, completely exposing the plexus of veins. The vas deferens is now carefully separated from the mass of veins for the whole length of the cord from close to the external abdominal ring down to the epididymis. This can readily be done, through the small incision made, by drawing the elongated cord out in a loop. A clamp forceps is now placed on the mass of veins at the



Fig. 1.

top of the scrotum, and another close to the epididymis, and the whole mass cut away, leaving about a quarter of an inch projecting from each pair of forceps. (Fig. 1.) The two cut surfaces are now very carefully brought together by a continuous suture of the finest catgut (specially prepared so as to be reliably aseptic) passed with a very fine glover's needle. Commencing at one edge, the needle is passed through the entire thickness of the cut surfaces at very short intervals, until the other edge is reached and included; the suture is then brought back again in the same way to the starting-point, and the two ends firmly knotted together. The clamp forceps are now removed, and, if the sutures are properly applied, no bleeding takes place. (Fig. 2.) If, however, not quite dry, one or two points of interrupted suture will quite suffice



Fig. 2.—Varicocele Treated by Suture.

to completely staunch the wound. *No ligature of any kind is employed.* The scrotal incision is now closed by continuous catgut suture passed so as to include all the divided fascial coverings of the cord; no drainage is necessary. The after-pain is slight, and convalescence is usually complete in eight or ten days under a single antiseptic dressing. I have

operated during the past five years on nine cases by this method; all of them were extensive varicoceles, the testicle hanging down 5 or 6 inches, and being much atrophied. All of them recovered without hæmorrhage, and none of them suppurated. Three have since passed into the Army Medical Service, and one has obtained a commission in the R.I.C.; in none has there been any recurrence.

Before adopting this method, where simply the veins were ligatured and excised, I found that the elongation of the scrotum continued after operation, and even was increased thereby; various methods have been recommended for bracing up the testis, but all of them are unsatisfactory. The suggestion of Mr. Bennett, to ligature the cord in two places and excise the mass in the usual way, and then knot the two ligatures together so as to shorten up the cord, appears to be unscientific, as it brings into apposition the two stumps rendered necrotic by the ligatures, so that adhesion cannot take place. By the method I have recommended, however, firm union takes place, and the cord is permanently shortened.

Another advantage is that no devitalised tissue is left to be absorbed and threaten the asepsis of the wound. The catgut used, however, must be above suspicion. I have found the best way to prepare it is as follows:—The finest dry gut is loosely coiled on a glass reel and put to soak for several days in a saturated solution of corrosive sublimate in ether; it is then taken out, the excess of solution shaken out, and kept for use in strong alcohol, which sufficiently reduces the strength of the corrosive sublimate. Only the very finest catgut should be used, as it is impossible completely to sterilise the interior of thick catgut. If for any purpose a stronger string is required, it can be easily prepared by twisting together several strands of the fine gut. I have tried experiments with gut prepared in this way and kept

for a long time in alcohol, and invariably found it sterile in a cultivation medium.

A somewhat similar method of operation is eminently suitable for the excision of selected cases of nævus; in fact, it can be applied to almost any nævus which could be treated by ligature. Long glover's needles are passed under the nævus, ready threaded with boiled silk; each needle is entered a quarter of an inch from the margin of the nævus, under the growth, and out a quarter of an inch beyond the growth on the opposite side. The number of needles varies, of course, with the size of the nævus; they should be passed parallel to one another at distances of about half an inch apart, and extend from one extremity of the nævus to the other. All the needles are left in position without drawing the threads

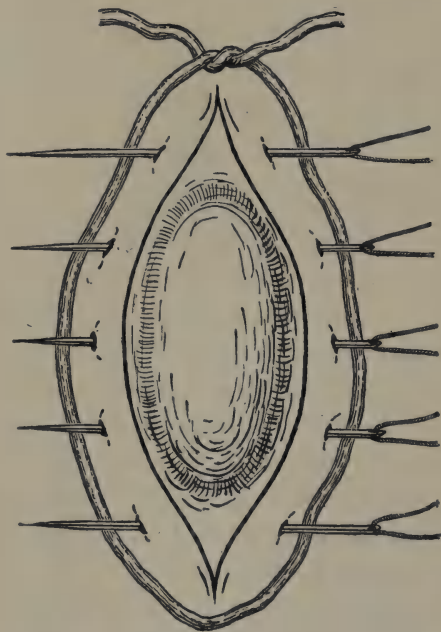


Fig. 3.—Nævus Treated by Suture.

through, while an elastic ligature to temporarily arrest bleeding is provisionally tightened underneath the needles. The nævus can now be excised at leisure, as the bleeding is under control. An elliptical incision is made down to the needles, leaving a margin of healthy skin all round, the elastic ligature is taken off, the silk threads rapidly pulled through, and the sutures firmly closed; if any bleeding comes from any point between the sutures, a few additional points of suture can be passed by a curved needle. (Fig. 3.) The advantages of obtaining a clean linear scar, healed in a week, over the slow sloughing away of a ligatured nævus are obvious.

I have operated in this way six times, and have every reason to be satisfied with the results.

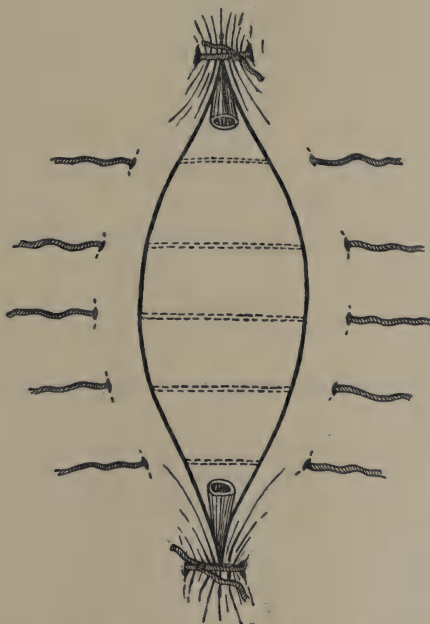


Fig. 4.—Varicose Veins of Leg Treated by Suture.

In excision of varicose veins in the leg it assists much the aseptic healing if we dispense with ligatures to the divided veins. This can readily be done by means of sutures. An incision is made over the section of vein intended to be excised, the vein caught by two pairs of catch-forceps, divided between them, and dissected free to the upper and lower limits of the incision. A series of deep silk sutures are now passed under the wound, the one at each angle passing under the vein. These two sutures are first closed, and as they completely control the bleeding, the portions of vein to which the catch-forceps are attached may be snipped away close up to the sutures; a continuous fine catgut suture is applied to the edges of the wound, and, afterwards, the other deep sutures are closed so as to completely obliterate the wound cavity. (Fig. 4.) The deep sutures may be removed about the fifth day. I have operated eighteen times by this method with complete asepsis and satisfactory obliteration of the vein.

The above three operations illustrate what I consider to be useful expansions of the treatment of bleeding by sutures, and I am sure other developments of the method will occur to any surgeon who, from practical application of the procedure, becomes impressed with its utility.

THE PRESIDENT thought that papers dealing with practical matters of detail of this sort were of more interest than the capital subjects of surgery. With regard to the question of the avoidance of ligatures, he agreed with Mr. Ball. Quite recently he had written a paper, published in the *Dublin Journal of Medical Science*, on operations on veins. He thought that sutures were better avoided in superficial operations which have to do with veins. Mr. Ball's passage of a ligature under the varicose vein is practically a soft ligature by acupressure. The President did not approve of the removal of large portions of veins. He would prefer several

operations over a limited area. He has done hundreds of operations for the cure of varicose veins, and both he and his colleagues have given up large operations on veins. He agreed with nearly all Mr. Ball said on operations for varicocele. In that case pressure applied by a pad low down over the loose scrotum is not suitable. His own practice is to excise from half to one inch of the pampiniform plexus, pass a sterilised catgut ligature round the stump, and ligature the cut ends. He only tied the ligature round the stump tight enough to stop hæmorrhage. The part did not then necrose, and no slough was left. One great difficulty was the exact ligaturing of the skin of the scrotum, owing to the inversion of the skin, produced by the dartos muscle. He had learned a plan from the late Mr. Stapleton, of Jervis-street Hospital. It was called a *post-mortem* suture, and was passed from the deep surface to the skin. This produces eversion.

MR. BENNETT bore testimony to the success of the cases mentioned by Mr. Ball. What he thought of most importance was his method of dealing with nævi. If the nævus were only the size of a shilling there was no necessity for cutting it out. Two ligatures could be passed at right angles, with an elastic ligature round them, and the little tumour contracted to nothing in a week. But in a large growing nævus in a young child what was to be feared was the loss of blood during the performance of the operation. By Mr. Ball's method no blood was lost. It was a much superior method to the different coloured strings adopted by Erichsen.

DR. S. M. THOMPSON highly approved of deep sutures. Secondary hæmorrhage was not nearly so liable to occur, and the dressings could be left on for a considerable time.

MR. KENDAL FRANKS entirely agreed with what Mr. Bennett had said about nævus. He had never tried Mr. Ball's method, but hoped he would have an opportunity of trying it shortly. It was a new method. He did not think there was so much novelty in the other matters mentioned in this paper. He did not think there was ground for the terror which some people had for a drainage tube. Where there is considerable loss of substance beneath a wound, he generally preferred to insert a drainage tube after suturing the skin, and to apply pressure. In the majority of cases, however, he thought the deep suture the best. In breast operations, and above all in amputations, he thought the deep suture the ideal method. He preferred the President's method of operating on varicocele to

Mr. Ball's. With regard to operations on varicose veins, he did not see any difference between putting a ligature under the vein and tying it over the skin and tying it under the skin. It is quite unnecessary to remove large portions of veins. He thought that the success of operations on varicose veins depended on the after treatment. If the patient is allowed to walk about without any support to the limb, when the wound is healed, superficial veins will often enlarge. The patient must wear an elastic bandage or stocking for 4 to 6 months, until the collateral circulation through the deep veins is effected. As the deep veins lie between muscles, if they become varicose, it does not signify.

MR. THOMSON thought Mr. Ball's treatment of nœvus was the most important practical suggestion. It seemed to him that the ligature had been put upon its trial. Mr. Ball had abandoned the term ligature for suture, but he maintained that Mr. Ball was only ligaturing the veins in another way. He thought his results were not due to this particular form of suture. Some of Mr. Ball's methods were neater methods, but not better in their absolute results.

MR. TAYLOR had seen a good many of the cases operated on by Mr. Ball. In the operation for varicocele, the catching of the veins by the forceps flattened them out, and so there was a good broad line of union on suturing. The shortening of the cord was important, because if the testicle was allowed to drop back into the scrotum it would draw on the cord and cause a recurrence of the pain, which is always present in cases of varicocele. He thought a very good way of closing the scrotal wound was to draw the angles of the wound apart, and put in a continuous suture. Since he had been to Vienna he was more than ever in favour of deep sutures.

MR. BALL, replying, said that the President had used the terms "necrosis" and "slough" as being practically synonymous terms. He did not agree with this. A necrotic part becomes a slough when it becomes septic. The more necrotic tissue, as ends of veins, that is present in a wound, the more likely is it to become septic. A certain amount of necrotic tissue can be absorbed, but the less there is in a wound the better. In varicocele, by suturing the cut veins together, there are no necrotic ends formed, as would have resulted had they been ligatured. In operating for varicose veins on the legs, he removed several small sections. In that operation the suture is like a ligature in that it surrounds the vessel. This,

however, is not the case in the operations for nævus and varicocele. In the operation for varicose veins of the leg, he thought his method of introducing the ligature was easier, and certainly it was easier to take out. It also dispensed with two pieces of catgut lying inside, and any operative technique which enables a surgeon to dispense with dead matter in a wound is an advance.

OBSERVATIONS ON EXCISION OF THE RECTUM FOR MALIGNANT DISEASE, DESCRIBING A METHOD OF OPERATION.

By FRANCIS T. HEUSTON, M.D., M.Ch., F.R.C.S.;

Professor of Anatomy, Royal College of Surgeons;
Surgeon to the Adelaide Hospital.

[Read in the Section of Surgery, April 26, 1895.]

THE operative treatment of malignant disease of the rectum has been for many years a subject of interest to surgeons, and of the different methods recommended for dealing with such cases none has had more vicissitudes than that of excision of the diseased portion of bowel and implicated structures surrounding it. Since the introduction of this operation by Faget in 1763, there have been periods when it held an acknowledged position, as there have also been periods when it was considered inadmissible. The reason for the disrepute into which this operation fell for so many years is evidently due to its adoption in improper cases; it is, however, my belief that, with our advance in surgery and a more accurate knowledge of the special circumstances which indicate the different methods of operation, its value will be more generally recognised, and my object in bringing this subject forward is to state what I consider to be the best method of dealing with a certain class of such cases:—

CASE I.—Mr. J. K., aged fifty-nine years, was recommended to me by my friend, Dr. Cooper Stawell, of Bagnalstown, in September, 1891, with the following history:—For a lengthened period, although his bowels were relieved normally in the morning, he had a great desire to go again about 10 p.m., when he passed

a small quantity of mucus. Some seven months since he noticed blood on the stools, and a little blood also appeared with the mucus when he went in the evening. From this time he had great desire at intervals to relieve the bowels, it being necessary to do so seven or eight times during the night, blood and mucus passing on each occasion with a feeling of soreness near the anus. For the month before I saw him he had pain and difficulty during micturition, it being necessary to stand and force for some time before the urine came.

On examination I found a hard irregular growth implicating the anterior aspect of the bowel, extending from slightly above the upper border of the internal sphincter for about three inches upwards on the anterior and lateral walls of the bowel, but not implicating its posterior wall.

Operation being recommended and agreed to, the patient was retained in the lithotomy position by Clover's crutch, and an incision was made in the median line from the anus to the tip of the coccyx; the bowel was now separated in its entire circumference by a scissors, keeping below the diseased structures, and above the attachments to the bowel of the levator ani and the sphincter muscles, when the bowel came down without trouble, except on its anterior aspect, where it was intimately attached to the prostate gland, off which I separated it by careful dissection with a blunt knife and scissors, when there was no difficulty in drawing the bowel down and removing the diseased portion. There was little hæmorrhage, as clip forceps were applied to each portion of the bowel before it was removed. Catgut sutures were now passed through the bowel about an inch above its cut extremity, including all its thickness, with the exception of the mucous coat, and then through the pelvic fascia and levator ani muscle; this closed off the superior pelvic space, and fixed the bowel in its position, thus hindering undue dragging on the second line of sutures, which were applied, connecting the cut extremity to the attachment of the levator and the sphincter muscles and mucous membrane which I had left below when originally separating the bowel. A drainage-tube was now placed into the space behind the bowel, and the incision from the anus to the coccyx closed.

After the operation the patient progressed satisfactorily, the bowels being kept from moving by opium until the seventh day, when the temperature showed an upward tendency; a dose of castor oil was given, after which recovery was uninterrupted, the

patient being allowed out of bed a fortnight after operation, and allowed home a week later, having full control over his bowel.

I have, on several occasions since, heard of this patient from Dr. Stawell, who reports that he is in perfect health. Microscopic examination showed the tumour to be cylindrical epithelioma. It is now three years and six months since operation.

CASE II.—In June, 1891, I was consulted by Mrs H., aged fifty-one years, as to a pain in the lower part of her back, from which she had suffered for some years; this had become very severe for the past fortnight, being continuous even when lying down, although much worse when sitting or standing. Her bowels were confined; and seven months before seeing me she noticed a swelling at the anus, and pain on going to stool, which was much worse when the bowels were confined; she also noticed blood on the stools. On examination I found internal piles, one of which was ulcerated, but could ascertain no other abnormal condition.

Under treatment she rapidly recovered, and returned to the country.

I next saw Mrs. H. in June, 1892, when she informed me that she had a severe attack of influenza in January, after which she was greatly debilitated and had a severe pain in her back, with a gradually-increasing difficulty in obtaining movement of the bowels. When the bowels were relieved she had a feeling as if some obstruction existed, and had a severe burning pain for some time, after which a considerable quantity of blood and mucus passed. Believing her symptoms to be due to the influenza, she consulted a physician, who ascertained the presence of a tumour in the bowel; she was then seen by a surgeon, who agreed in the diagnosis of malignant disease, but declined operation, owing to the fixation of the tumour to the sacrum. The patient desiring my opinion, I examined her, and found a well-marked growth, implicating the posterior wall of the bowel, between two and three inches from the anus; this growth lay between the rectum and the sacrum, on which it could be slightly moved. The mucous membrane over the tumour was ulcerated to about the size of a crown piece. Believing operation to be feasible, I requested a consultation with Mr. Kendal Franks, who agreed with my opinion.

The operation was performed in a similar manner to that already described.

When the tumour was reached I found it attached to the sacrum

by cellular tissue, but had no difficulty in separating it; the diseased portion being removed, the bowel was drawn down and deep sutures applied, as in former case. When the second row of sutures uniting the extremities of the bowel were applied, I found a considerable cavity remained between the bowel and sacrum. A drainage-tube was passed into this, and the wound from the anus to the coccyx sutured, the tube being allowed exit at the posterior extremity of this incision.

For some days after the operation the patient was very restless. The stitch nearest the anus tore through, and a large quantity of serous discharge came through the drainage-tube. A purgative was given on the eighth day. She was allowed out of bed on the 17th day, and went home on the 31st day after the operation, having all but perfect control over her bowel, the only subsequent trouble being that, for a short time, a slight mucous discharge came from the bowel at its posterior aspect where the suture tore through.

This patient has since communicated with me, and states she has no difficulty with her bowels, and that her health has greatly improved. Two years and nine months have now elapsed since operation.

I will now direct attention to certain points in connection with the operation. In these cases it is of importance that the peritoneal cavity be not opened; this may usually be attained by remembering that the peritoneum covers the anterior aspect of the rectum in the male to within three inches of the internal sphincter, while in the female you cannot be sure of more than two inches, although there may be much more in either case. At the posterior aspect of the bowel you can count on four or five inches.

As a practical rule, I consider that if the surgeon can, by digital examination, reach above the malignant growth, the peritoneum should be safe.

The great objection to excision of the rectum by the usual operations is the incontinence owing to the removal of the sphincters. The importance of overcoming this

sequela is apparent, and to point out how this may be attained I will describe the usual operation, and compare it with the method employed in the foregoing cases.

The usual operation is commenced by an incision from the rectum to the coccyx, called by the old writers the key to the operation; then incisions were made round the anus meeting in front, the attachment of the levator ani to the rectum is cut, and the bowel with sphincters drawn down. Thus, most of the external sphincter and the entire of the internal sphincter are removed, and incontinence, which was often permanent, resulted. Further, the remains of the bowel not being usually united to the skin, owing to the frequency with which the sutures tore through, the raw surface, thus left to granulate, was a frequent source of septic infection and consequent stricture.

The operation I employ is commenced by an incision from the rectum to the coccyx, as in the former operation; this being in the median line, severs the attachment of the external sphincter and levator ani muscles to the ano-coccygeal ligament. The rectum is now separated from the surrounding cellular tissue, and clip forceps applied to the rectum, at the commencement of the ampulla, below which the bowel is divided. The attachments of the levator ani and sphincter muscles to the bowel are thus not interfered with, and hæmorrhage is restrained. The rectum being now completely divided above the internal sphincter, there is not much difficulty in drawing it downwards and backwards through the median incision, its separation from the prostate and base of bladder being facilitated by having to draw it backwards; clip forceps are now applied above the diseased portion, which is removed by a scissors. The upper portion of the bowel is now fixed by deep sutures attaching it, about an inch above its cut extremity, to the recto-vesical fascia and levator ani muscle, thus

closing the space between the levator ani and the peritoneum. In applying these sutures care should be taken that the mucous coat of the bowel is not penetrated. A second row of sutures is now applied between the cut extremity of the bowel and that portion which had been originally left below; these sutures should penetrate the entire thickness of the bowel in both instances. The object of the upper row of sutures is to so fix the bowel as to obviate the danger of the sutures uniting the cut extremities of the bowel tearing through. The incision from the anus to the coccyx is now closed, the most anterior suture including the posterior aspect of the bowel, but not penetrating the mucous coat. The levator ani and sphincters will thus have their normal relation to the extremity of the bowel preserved. It might be thought that the lower portion of the bowel is in danger of sloughing owing to the superior and middle hæmorrhoidal arteries being cut away from it, but the hæmorrhoidal branches of the pudic arteries are sufficient to retain its vitality.

It will be seen that both the cases I bring forward were examples of malignant disease in the middle third of the rectum—in fact, such cases as are frequently considered unsuitable for operation, as actually occurred in Case II., or are subjected to one of the numerous extensive surgical procedures recently recommended and employed. If I can show that such cases may be successfully operated on by a more simple and less fatal method, my object in bringing this subject forward will be attained.

On referring to recent literature on this subject it will be seen that cases of malignant disease implicating the middle third of the rectum are frequently subjected to operations requiring removal of the coccyx and part of the sacrum, by oblique or transverse section, as in the operations of Kraske and Bardenheuer, or osteoplastic resection

of those bones, as in that of Rydygier; that in most of those cases no attempt is made to restore control over the bowel owing to the necessarily abnormal position of its termination, the patient being thus condemned to the permanent employment of some—usually imperfect—apparatus to retain the fæces in the bowel until evacuation is desirable. I wish it to be understood that I do not condemn such operations, which have a fair and legitimate field of their own, when the disease is situated in the upper part of the bowel, but I consider them unnecessary in most of the cases restricted to the middle and lower third of the bowel.

Should the peritoneal cavity be opened in the operation I favour, it is very effectually closed by the deep row of sutures; and although the probability of a favourable termination to the case is thus lessened, I do not consider the possibility of such a complication to be sufficient to contra-indicate its employment.

The advantages I claim for this operation are—it preserves the normal functions of the bowel, subsequent stricture is not so liable as after the usual perineal operation, convalescence is rapid, the mortality is lower, and the disease is no more liable to recur than after the more extensive operations.

The PRESIDENT said that within the last few years the treatment of cancer of the rectum had attained a very satisfactory development. He entirely disagreed with Mr. Heuston regarding the removal of cancer of the rectum by the perineal as compared with the trans-sacral operation. He had at present two patients in the Richmond Hospital, both of whom he could not have ventured to touch by the perineal method. He did not dread the opening of the peritoneum. Cancer of the middle third of the rectum could not be removed by the perineal operation without opening the peritoneum—if, as Mr. Heuston stated, the peritoneum often came

down to within $1\frac{1}{2}$ to 2 inches of the sphincter. It was better to open the peritoneum by an operation which gives a perfect view, such as the trans-sacral does. Personally he preferred the lateral semiprone position to having the patient placed on his back. The last modification of the trans-sacral operation is a conservation of the sacrum. He doubted if any very complete conservation of the sacrum was desirable, as the anus was placed very high up. The dangers in the trans-sacral operation were less than from the blindfold operation of groping in a pool of blood through the perinæum. One danger was the infection of the wound by the discharge from the bowel. In both of his cases he had applied a circular ligature round the rectum, intending to remove it if the patient had any vomiting or intestinal symptoms. It sloughed away of itself in 48 hours. In the meantime a copious lymph exudation had taken place in the wound. In this operation there was hardly ever any necessity to remove the coccyx. He did not remove it in his last case. He removed the lower part of the sacrum. If the coccyx was in the way it was quite easy to split it in two and turn the halves aside.

MR. BALL said Mr. Heuston's paper had raised what the President had described as a test between the perineal and trans-sacral excision of the rectum. He did not think there was any doubt that both of these operations had their right place. The perineal excision of cancer must be kept for a very small minority of cases in which the disease is very close to the anus. The so-called trans-sacral operation need not necessarily be a trans-sacral one when the cancer was low down. Quite sufficient room could be got by dividing the coccyx from the sacrum without cutting the sacrum at all. The additional room gained by removing the sacrum is very great indeed. Only yesterday he had seen a lady in whom he had divided the sacrum trans-sacrally two years ago. At the time he was quite unable to estimate the extent of the disease. He had relied simply on the fact that the tumour was freely movable in the pelvis. He thought that was a very important point in deciding whether a case was one for operation or not. In this case he had to remove nearly the whole of the rectum and, perhaps, part of the sigmoid flexure—in all six inches. He had then to divide the mesentery of the rectum or sigmoid flexure to some extent, so as to be able to bring down the intestine sufficiently to stick it to the intestine and anus left in the floor of the pelvis. It was an ideal result: complete and absolute union

between the upper and lower parts of the intestine. The floor was not disturbed. The operation had been conducted above the levatores ani. One could not always expect to get such a result as this. He did not quite follow Mr. Heuston's description of the operation he performed. Did the incision from the anus to the coccyx involve the anus or start outside it? If it did not involve the anus it was the operation selected by everybody in suitable cases. The coccyx could be excised, or the sacrum, up to the 3rd sacral foramen. Above this foramen the bladder would be paralysed.

MR. CROLY said that Mr. Heuston stated some of his patients suffered from intense pain. His experience of cancer of the rectum was that it was constantly overlooked till it had gone on too far. If he could not get his finger above the diseased part, he either left the case alone or did a colotomy. He thought the fact whether the lymphatic glands were implicated or not, was a very important point. He would like to know the condition of the patient in a few months.

The PRESIDENT said that in one of his cases he found considerable implication of the lymphatic glands, and that he readily removed them as high as the brim of the true pelvis. The trans-sacral operation gave great opportunity for examining the pelvis.

MR. FRANKS said that in a case of cancer of the rectum high up, he would prefer a trans-sacral operation. Of all situations in the body, with the exception of the lower lip, cancer of the rectum offers the best hopes of non-recurrence. The disease usually lasts a considerable time before it invades the glands. Mr. Heuston's case was one in point. In a case which he had operated on the disease involved the anus, and extended up three inches. He removed the whole anus, and brought down the bowel and sutured it to the skin. He saw her nine years after operation and there was no return of the disease. She had no trouble although she had had no sphincters during this time. In another case in which the disease extended as high up as he could feel, he had considerable difficulty in removing the rectum, and afterwards discovered that the disease had been treated elsewhere by caustics and the cautery. This case lived for three years, after which he lost sight of the patient. If the growth were irremovable the French method of proctotomy was better, in his opinion, than colotomy.

MR. WHEELER said that with regard to the recurrence of cancer of the rectum, his experience was not so favourable as Mr. Franks'.

He did not agree with him that patients objected to colotomy. They might have disliked the lumbar form.

SIR W. STOKES said that up till now he had followed the teaching of Professor Syme, who laid down that all cases of cancer of the rectum that were beyond the reach of the finger were unfit for operation. Now, however, he had changed his opinion. He had only operated on cases in which the disease was near the anus by the old perineal operation. His results were mostly very satisfactory.

MR. THOMSON believed that prognosis of cancer of the rectum was more favourable than of cancer in most other parts of the body. When the cancer was close to the anus he agreed with Mr. Ball that the perineal operation was the proper one to adopt. When the disease was higher up he had no doubt that the trans-sacral was the best. It gave most room and enabled the parts around the seat of the disease to be thoroughly examined. There was very little hæmorrhage and it was easily controlled.

MR. HEUSTON, replying, said he did not recommend the perineal operation in a certain class of cases. He did not agree with the President that the peritoneum must be opened if the disease occurs in the middle portion of the rectum. On the anterior aspect, the rectum could be removed as high as the prostate; on the lateral aspect $4\frac{1}{2}$ inches of the bowel could be removed, and 5 inches on an average behind, without opening the peritoneum. If the peritoneum was opened it could be effectively closed by the deep row of sutures. He agreed that the trans-sacral operation is the best where the disease is high up in the bowel, or where there is much implication of the glands of the pelvis. The glands cannot be cleared out in the perineal operation. In making his incision he went clean through from the anus, as he got more room. His experience of colotomy was such that he would never perform the operation unless driven to it. His experience of it was that it did not relieve the patient of pain.

INJURIES OF THE THUMB.

By EDWARD H. BENNETT, M.D., F.R.C.S.;

Professor of Surgery in the University of Dublin.

[Read in the Surgical Section, May 24, 1895.]

THE dislocations of the thumb, particularly those of the metacarpo-phalangeal joint, have long attracted attention because of the uncertainty that exists as to their pathology and the difficulty so often experienced in their treatment. The dislocations of the metacarpo-phalangeal joint are usually divided into two groups—those in which the phalanx is displaced backwards, and those in which it is displaced forwards—Hey's dislocation and Hey's reversed. In 1888 a lateral dislocation of the phalanx outwards was first described, and to-day I have the good fortune to submit to the Academy an example of complete dislocation of the phalanx inwards.

In this city we have the pathology of these injuries illustrated by five specimens—the first, a dried preparation of the skeleton of a hand in which Hey's dislocation exists unreduced, which has been presented to the Royal College of Surgeons by the late Dr. Bevan. The remaining four are specimens, preserved in spirit, which I have obtained from the anatomical department of Trinity College, and have preserved in its pathological museum. Two of these are Hey's dislocation, the third a dislocation forwards, the fourth a complete dislocation of the phalanx inwards.

In order that the details of these specimens may be clearly seen I propose to project their photography on the screen. I am indebted to Professor Cunningham, Professor Scott, and Dr. Dixon for the photographs which they have taken for me as I worked along through the examination of these

specimens, and I desire to thank these my excellent colleagues for the great help they have given me. The question of the cause of irreducibility in these dislocations is a difficult one to approach; indeed, one author submits that by a judicious treatment of the subject "the ten above-mentioned difficulties admit of 1,023 combinations."^a I propose very briefly to submit the views of M. Farabeuf as those most generally accepted in America and on the Continent, and to see how far they fit in with the facts as seen in these unreduced dislocations. The merit of M. Farabeuf's article is its clearness of description and of illustration. There is nothing original in his theory or classification, which are substantially the same as those published by Laurie in 1837. He recognises the following as the varieties of the dorsal dislocation:—1. Dislocation, simple incomplete. 2. Dislocation de Dugès, in which the anterior border of the phalangeal articular surface rests on the dorsal margin of the metacarpal articular surface, the phalanges of the thumb being directed in a line parallel to the axis of the metacarpal. This dislocation was described in 1831 by Dugès from his experience of it in his own person. 3. The dislocation simple complete. 4. The complex dislocation, in which the sesamoid bone attached to the phalanx is turned between the base of the dislocated phalanx and the metacarpal. In the simple dislocation this sesamoid bone rests on the dorsal surface of the metacarpal or on its articular surface, entirely free of the base of the phalanx. The point of greatest practical importance in M. Farabeuf's investigation is that it suggests the active agent in the production of the complex dislocation. "The active and, as one may call it, the ill-advised agent has been either the patient himself, or a friend—more often still a medical man, more or less of a surgeon." In other words, ill-directed efforts to reduce the displaced phalanx by exten-

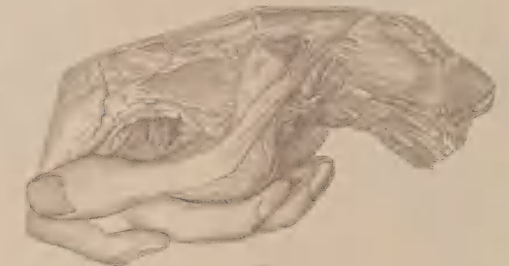
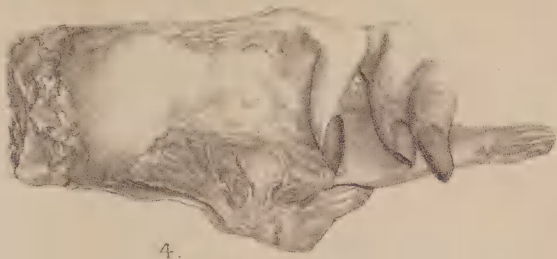
^a Kelly. Dublin Journal of Medical Science. Vol. LXXV.

sion which cause the intrusion of the sesamoid with its fibrous surroundings between the phalanx and metacarpal, while they become reversed under the action of the short flexor muscle of the thumb. In M. Farabeuf's paper the evidence of these details rests chiefly on the examination of experimental dislocations. I propose to see how far they are supported, or the reverse, by these three specimens of old unreduced dislocations. I can present no history of any of these, and so the only fact certain is that they remained unreduced whether they were treated surgically or otherwise. In the dried specimen the soft parts have all been cut away except such as immediately connect the bones, but it is clear that a considerable thickness of firm structure intervenes between them which is composed of the sesamoid bones with their fibrous connections. In a good light it is easy to see the structure of the bones, the internal most directly interposed between the base of the phalanx and the metacarpal. This example is, therefore, one of Farabeuf's complex dislocations,^a Plate I. The two specimens I have next to present are both complete dislocations, with the usual external features of the deformity. In one the sesamoid is exposed by a section through the dislocated phalanx and its false joint, which is formed with the dorsal surface of the metacarpal, and it can be seen reversed and ankylosed by its palmar surface with the metacarpal, while it forms a socket for the dislocated phalanx. In the other the conditions of a complete simple dislocation are present, and the sesamoids are free and are articulated by movable joints with the dorsal surface of the metacarpal in the portion of that surface intervening between the new articulation for the dislocated phalanx and the head of the metacarpal as it projects into the palm. This, according to Farabeuf's view, should have been a reducible dislocation.

^a Dans la luxation au pouce en arrière, la phalanx n'est rien, les os sesamoides sont tout !

EXPLANATION OF PLATE.

- FIG. 1.—Dried specimen of Hey's dislocation. Complex dislocation of Farabeuf, the sesamoids interposed between the metacarpal and phalanx.
- FIGS. 2 and 3.—Two stages of the dissection of an old unreduced "complex" dislocation of the first phalanx of the thumb backwards. In Fig. 3 the sesamoid is exposed by a section through the dislocated phalanx and its false joint; it can be seen reversed and ankylosed by its palmar surface to the metacarpal.
- FIGS. 4 and 5.—Complete simple dislocation of the first phalanx of the thumb backwards; the sesamoids are free, and are articulated by movable joints with the dorsal surface of the metacarpal.
- FIG. 6.—From a drawing by Conolly of an unreduced dislocation, the reverse of Hey's, the phalanx dislocated forwards.
- FIGS. 7 and 8.—From casts of two dislocations, the reverse of Hey's, in which reduction failed in spite of the skilled efforts of experienced surgeons.
- FIGS. 9 and 10.—Unreduced dislocation of the metacarpo-phalangeal joint of the thumb forwards.
- FIG. 11.—From a cast of hand in which there are present complete dislocation of the first phalanx of the thumb inwards, and a complete dislocation of the base of the first metacarpal backwards on the trapezium.
- FIG. 12.—From a photograph of the dissection of the preceding specimen.



when recent ; in the absence of history this cannot be proved or disproved. It may be, as in the next specimen I have to present, that treatment of any kind was not adopted while the dislocation was still recent.

The three specimens, then, of unreduced dorsal dislocation are these two complex and one simple. It is difficult to accept as the sole cause of irreducibility the intrusion of the sesamoid and its fibrous surroundings, for this condition is absent in one of my specimens, and in the dislocation forwards irreducibility is not uncommon, while there is no structure corresponding to the ligament and sesamoid present.

My next illustration is, from a drawing by Conolly, of an unreduced dislocation of the first phalanx of the thumb forwards, the reverse of Hey's dislocation. The patient was aged seventy-one. Some forty years before the drawing was made he was engaged in grooming his master's horse, when the animal attempted to bite him and he struck him on the side of his head with the closed hand. He immediately experienced great pain in the thumb, which was at once rendered powerless ; great swelling and inflammation followed, and continued with more or less severity for three weeks. He did not apply for any professional aid ; and when, at the end of about a month, the swelling had quite subsided, the thumb presented the appearance represented in the drawing. On the dorsum a striking projection is seen formed by the anterior extremity of the metacarpal bone, the articular surface of which can be plainly distinguished ; the posterior end of the first phalanx could be felt, forming a tumour in the base of the thumb, but it did not form any visible projection. The axis of the thumb was inclined backwards and inwards, the luxated extremity of the phalanx being directed towards the second metacarpal bone. The thumb was shortened half an inch, slightly rotated inward, and flexed on the metacarpal bone, the phalanges, however, being

extended on each other. In this case neglect of treatment explains the unreduced condition of the dislocation. Two similar dislocations, of which I possess casts and complete histories, are of special interest, for in both the reduction failed in spite of the skilled efforts of experienced surgeons.

Amongst the recorded cases there have been some few which have resisted reduction, but as yet we have not even a theory to account for this. I regret that I am unable to throw any light on the cause of the non-reduction in the next specimen I present. The hand was obtained from the body of a female subject in the dissecting room, so we know nothing of its history, but the dislocation in all respects repeats the features seen in the previous illustrations. The ungual phalanx is ankylosed to the first and is nearly in a line with it. There is no evidence of suppuration having occurred either in the immediate neighbourhood of the joint or in any part of the thumb, nor was there any scar present. The dislocated phalanx rests on the palmar aspect of the metacarpal and has a synovial articulation with it. The short abductor of the thumb is completely atrophied, and contrasts strongly with the short flexor which is firm and normal in colour. The condition of the long flexor tendon is most peculiar—where it lies amongst the fibres of the short flexor it is normal and free in its sheath, but opposite the base of the displaced phalanx it is intimately adherent to its sheath and through this to the dislocated bone. Further on the tendon is again free, of normal colour, and is, as it were, drawn tight beneath the immovably ankylosed joint between the phalanges. Now its adhesions to the base of the dislocated bone are a complete barrier to its reduction, but these adhesions could not have been present until some considerable time after the occurrence of the dislocation. Could they be the result of damage done to the tendon and its sheath at the time of the occurrence of the dislocation? or, again, could

they have been the result of attempts made to replace the dislocated bone by direct pressure on its base in a manner similar to the approved mode of effecting reduction in Hey's dislocation. So far, our knowledge of the cause, which in certain cases renders these two forms of dislocation irreducible, is not much advanced; the condition of the complex dislocation on the dorsal surface, no doubt, is established, and in it the irreducibility is readily explained. But what renders the palmar dislocation irreducible? Certainly not the intrusion of the sesamoid bones with their fibrous connections, as in the complex dorsal dislocation.

I pass on to the lateral dislocations of the metacarpophalangeal joint. As I have said, in 1888 the only known example was recorded by Bessel Hagen. I here present a photograph of the published illustration of the injury—of which the following is the history:—

CASE.—A powerful man, twenty-eight years of age, was fighting with a man who seized him by the throat; in trying violently to force himself away, his left hand slipped in a convulsive grasp against the lower jaw bone of his enemy, so that the jaw bone was driven in like a wedge between the thumb and the rest of the four separate fingers. Instantly the patient felt a violent pain in his thumb, so that he was unable to continue using his hand.

Twelve hours later Bessel Hagen examined him, and found his hand as shown in the plate. A good deal of swelling and a faint bruising showed that the cleft between the thumb and first finger had been deeply damaged, while the interdigital commissure was abnormally displaced forward, and the thumb was nearly $1\frac{1}{2}$ inches shortened. The thumb was opposed to the joint of the phalanx of the index finger. The axis of the first phalanx of the thumb was displaced laterally, so that it formed an obtuse angle with the metacarpal bone, open on the radial side. Thereby it turned towards the centre, not in the region of the metacarpophalangeal joint, but turned off sideways outwards nearly to the middle of the metacarpal. Finally the phalanx was turned round lengthways, and the skin of the border of the thenar eminence was thrown into folds. The palpation showed plainly that the head of the

metacarpal and the basis of the phalanx of the thumb were in contact. Passive motion only was possible, abnormal ab- and ad-duction could be carried out but with violent pain.

After these clinical appearances it was clear that a complete lateral dislocation outwards of the phalanx existed. The reposition succeeded easily under anæsthesia, by a strong pull to the thumb in the direction of abduction, and a direct pressure on the displaced basis of the phalanx towards the ulnar side. The bone sprang with a clear snap into its proper position. The functions and strength of the joint were perfectly restored in course of time. The explanation of the production of the dislocation is, according to Bessel Hagen, by contraction of the muscles opposite to the first metacarpal bone and the extension of the metacarpophalanged joint; combined with the force, the articular part of the last joint acted as a lever in producing the abduction. It is safe to assume, after Bessel Hagen's critical and experimental examination, that both lateral ligaments of the joint were torn, the dorsal as well as the volar part of the joint capsule, and a single pull of the fibres had given the excessive extension. Probably the tear from the ulnar lateral ligaments went out in a diagonal direction, breaking through the dorsal and volar part of the capsule, without, however, penetrating quite to the radial side. The muscles were simply dislocated. The reposition must fail unless the simple extension and impulsion of the thumb is adopted, so that, in the first place, by a hyper-abduction the relaxation of the strained capsular ligaments must be produced, and by direct pressure of the basis of the phalanx, the hand being fixed.

The last example I have to submit presents two rare lesions—1st, a complete dislocation of the base of the first metacarpal bone backwards, and at the distal joint of the metacarpal bone a complete dislocation of the first phalanx inwards. I obtained this example from the body of an aged female subject supplied for my course of operative surgery, and so know nothing of its history; but, in looking at the hand, one cannot resist the conclusion that a fall on, or heavy blow on, the radial border of the thumb displaced the phalanx laterally, and continuing its action pressed the metacarpal lengthwise, so as to dislocate its base backwards on the

trapezium. This complete dislocation is admittedly very rare. Malgaigne says he had seen two and could only discover two others. The number recorded since Malgaigne wrote has increased, and we find records of two dissections of the old unreduced dislocation such as this. I have already shown that the fracture of the base of the metacarpal bone, which is a common injury, has been confounded with the incomplete dislocation backwards. For fear of any error of this kind, I have made a section with a fine saw through this bone, and have so proved that it is a complete dislocation without fracture of the base of the bone. The dislocation of the phalanx in this specimen is very complete; the base of the displaced bone being applied to the side of the metacarpal and resting on it at a right angle, so that the extremity of the thumb is directed across the hand in the line of the heads of the outer metacarpals.

As I stated in the early part of this paper, I believe this to be the only example of complete internal lateral dislocation yet observed.

The PRESIDENT said the paper was exhaustive, and, to a very great extent, original. The only specimen which one could question was the one in which the hand was deformed by rheumatic arthritis. From the picture the question might be raised as to how far it was not part of the general deformity affecting the articulations of the hand.

MR. MYLES had only met with one case of Hey's dislocation in the living. After some trouble he had reduced it by exaggerating the deformity, the patient being under chloroform. He did not comprehend how the sesamoid bones got between the head of the metacarpal and the base of the phalanx, with their articular surfaces turned towards the latter.

MR. CROLY would like to have heard of methods for reducing dislocations. He had seen a dislocation forwards, the reverse of Hey's, and had reduced it with great facility. The last two dislocations of the thumb that he got he put the patient under chloroform, and having failed after trying many methods, he

manipulated the thumb, turning it round, and the thumb suddenly reduced. He believed all the dislocations were reduced by taking the muscles unawares. He did not think the division of the tendons of the flexor muscles of the thumb or opening into the joint was justifiable surgery.

MR. BARTON said that when he was Resident Surgeon a young boy came to him with an ordinary Hey's dislocation. He tried to reduce it by putting the hand over the corner of the table, and shoving the phalanx forwards. He got it in by increasing the deformity, but knocked off the epiphysis. He never heard of this accident occurring before.

MR. WOODS said that he saw a man at the Richmond Hospital. He had fallen on his thumb, and had a dislocation the reverse of Hey's. He saw him within an hour after the accident. He had the man anæsthetised, and tried manipulation of every kind for half an hour. With the assistance of four others, he then used brute force, but was unable to reduce it. The man went out and came back in thirty days. He took a cast of his hand, a photograph of which Mr. Bennett had shown. On looking up the pathological reports of the Museum of Trinity College, he found Mr. Smith had related a similar case which he had failed to reduce after repeated trials. Nélaton had also recorded another.

MR. HEUSTON said that within the past six months he had had an interesting case. A midshipman on a voyage to South America fell from the mast, and got a compound dislocation of the carpometacarpal joint of the thumb. It was not reduced. On coming back in three months, he went to the Edinburgh Infirmary, where he believed he got it reduced. He saw him two months later, when the dislocation was still present. He dissected down on the articulation, from the internal aspect, and found that the sesamoid bones had got between the two parts. He dissected them out, and was then able to reduce the dislocation. It got all right. He did not see which way the articular surface of the sesamoid bones were turned.

MR. LENTAIGNE had met with four cases of dislocation, which all reduced without difficulty under anæsthesia. He did not agree with Mr. Croly that dissection operations should not be performed under any circumstances. If he got a case which he could not reduce, and if the patient would allow him, he would operate, and not leave the case permanently dislocated. Mr. Heuston's remarks bore out his ideas.

MR. BENNETT, replying, said that in the complex dislocation there was a point that required explanation. If the phalanx was pulled away from the metacarpal bone, the fibres of the short flexor, attached to the sesamoid bones, were stretched, and so the articular surface of the sesamoid bones was turned towards the phalanx.

HERNIA AND TAXIS.

By HENRY GRAY CROLY,

Fellow and Past President, Royal College of Surgeons;
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[Read in the Section of Surgery, May 24, 1895.]

No subject in surgery is of greater interest to the practical surgeon and clinical teacher than Hernia, and in selecting a subject for the consideration of this Section of the Academy, I felt I could not do better than place on record some of my own experience on hernia and taxis gained by a long personal knowledge, acquired in my hospital and private practice. In such a Society as this I am addressing many who, like myself, have learned by patient dissections the surgical anatomy of hernia, and who, having acquired that knowledge, have had the subject fixed for ever on their minds by teaching students and “by the application of anatomy to surgery.”

As taxis precedes herniotomy, a few practical remarks on the subject may not be out of place before detailing some of my cases.

“TAXIS.”

Taxis should mean the methodical, gentle manipulation of herniæ, for the purpose of effecting their reduction; but under the mild expression “the use of the taxis,” the hernia but too frequently is compressed by forcible manipulation, its tissues contused and irreparably damaged—in fact, more injury may be inflicted on the bowel in a few minutes by coarse, careless, impetuous brute force, than the constriction alone could produce in several days. Desault says:—

“Always think favourably of a strangulated hernia when the taxis has not been used.” I have, in my clinical teaching, ventured to modify that important surgical aphorism, thus: “Think favourably of a strangulated hernia when the taxis has not been abused.” That taxis is essentially a process of more or less violence, no one who understands the subject can deny, and the method of employing taxis—when to adopt it, and the time to refuse such manipulation and proceed at once to operate—can be acquired only by experience. If there are signs of inflammation, oedema, emphysema, or gangrene, or if the patient is collapsed, taxis should not be employed. If the tumour is very tense, especially in femoral hernia, the less taxis the better. In my own practice for many years—having satisfied myself from the symptoms, constitutional and local, that the case is one of strangulation—I have an enema administered by means of a long tube and the bladder emptied. I explain fully to the patient and friends the serious nature of the case; I have the patient anæsthetised and the instruments and appliances close at hand; I give the taxis, in suitable cases, a fair trial, having the parts relaxed by proper position; and, if no impression can be made on the tumour, I proceed with the operation forthwith. Taxis cannot be practised as long in femoral as in inguinal hernia, in consequence of the contents of the sac and the dense and unyielding structures involved. I have seen the marks of the fingernails of the “taxis” surrounding a femoral hernia. I have seen the intestine burst by the violent efforts of a patient to reduce a femoral hernia, and the contents of the intestine extravasated into the abdominal cavity—the *post-mortem* examination verifying the diagnosis. I have seen a femoral hernia reduced *en masse* by taxis “with inversion of the body,” and the patient died. Dangerous as taxis is in

unskilful hands, it is often, in experienced hands, the cause of death by the dangerous delay in operating, and giving time for peritonitis or gangrene to be established; and yet we read in the present day in a medical journal such statements as these—"Statistics of herniotomy did not give unqualified support to the arguments of those who 'held that operations did not increase risk.'" "Students were now warned against the taxis as being in itself dangerous, and, on all hands, early operations were enjoined." "Yet despite the fact that many cases were now operated on which would formerly have been reduced without operation, the statistics of the operation did not improve, and it might be reasonably feared that the fatality of strangulated hernia, taken as a whole, had increased. It was to the 'strangulation' itself that the results were due which it was customary to attribute to the surgeon's hands."

This distinguished surgeon goes on to say:—"He was sometimes amused to hear forcible taxis denounced; he had always been accustomed to use all the force that his hands possessed, and had often regretted that they tired too soon." "He had lost three patients after reduction of femoral hernia by taxis, but not one after inguinal." "It was the experience of all surgeons that little or no anxiety attached to cases in which the taxis succeeded, while statistics placed it beyond doubt that the mortality after operation was large. These undoubted facts constrained to the belief that the operation was in itself a cause of danger."

In my own practice I have never seen anything to amuse in strangulated hernia, though I have always been intensely interested and deeply impressed with the gravity of the subject. The most distinguished and experienced surgeons, operators, and anatomists, from Hey's, Desault's, Sir A. Cooper's, and Lawrence's time down to the present, were and are in favour of early herniotomy, and it is, therefore,

to me most incomprehensible how any thoughtful and experienced surgeon could give the advice which I have just read.

Sir A. Cooper says—"No violence should ever be used; for besides being unavailing, it greatly aggravates the inflamed state of the contents of the hernial sac, and has been known even to burst the gut." Mr. Lawrence says—"When the rupture becomes painful we are no longer justified in attempts at reduction by the hand—a sufficient pressure cannot now be endured; and the force which is employed only tends to increase the inflammation and accelerate gangrene. At this period the operation is required and should be performed without delay."

In strangulated hernia every moment is of vital importance, and upon the skill, judgment, and firmness of the surgeon the lives of his patients hang. On looking over the proceedings of the old Surgical Society of Ireland, January 13th, 1869, I find that in a discussion on strangulated hernia, following on a communication of mine, in which I urged early herniotomy, my senior surgical colleague, Professor Hargrave, said—"I agree with Mr. Croly that the taxis should be abolished; it was not from the operation the patients died, but from the delay in having recourse to it." I had seen at that time such disastrous results from taxis practised on patients before coming to hospital, and after admission by "all hands" in the hospital, that I dreaded the taxis far more than the operation, and Mr. Hargrave and Mr. Tufnell, both skilled in hernia, especially Mr. Hargrave, practically gave up taxis, except in cases not acute. If all cases of strangulated hernia came under the observation of a judicious and experienced surgeon, and that after an attempt, under an anæsthetic, the taxis failed, herniotomy was performed, very few lives would be lost.

Here is the advice of the experienced Hey on the subject of hernia:—

“I can scarcely press in too strong terms the necessity of an early recourse to the operation in this dangerous disease.” He adds—“If Mr. Potts’ opinion be true, ‘that the operation, when performed in a proper manner and in due time, does not prove the cause of death oftener than perhaps one in 50 times,’ it would undoubtedly preserve the lives of many to perform it almost as soon as the disease commenced, without increasing the danger by spending much time in the use of means which cannot be depended upon for a cure.” Mr. Hey saw this disease prove fatal in twenty-four hours.

When Hey commenced his practice in 1759, in Leeds, the operation was considered as the last resource.” By this dilatory practice,” he adds, “I lost 3 patients in 5.” He continues—“I have now performed the operation (1809) 40 times, and often had occasion to lament that I had performed it too late, but never that I had performed it too soon.” As his experience improved he operated early and lost 2 in 9.

My friend Mr. Bryant, Past President R. C. S. England, writes to me as follows:—

“*Forcible taxis* is only justifiable when all other means are rejected by the patient or his friends, and the alternative is to let a case take its course. A former colleague of mine, now dead, was fond of force, and he certainly succeeded in reducing femoral and inguinal hernia when other surgeons had failed; but it must be added that when I went over the P. M. records of hernia cases, those that died from rupture of the bowel were all registered as having been under his care, consequently what successes he might have gained were more than neutralised by these fatal failures. For my own part, as a method of treatment, I condemn force, and feel that the taxis should never be applied in a case of *strangulated* hernia unless the patient is under an anæsthetic, when, if the taxis is to succeed, it will do so by a pressure which cannot be called forcible. The

value of chloroform as an adjuvant to the taxis is seen better in inguinal than in femoral hernia ; but it is good in both, and should be employed. In neglected cases of femoral hernia the taxis may be omitted in favour of early operation, for with early operation success would probably almost always be secured."

Mr. South recorded a case in which a strangulated hernia reduced itself by the patient being driven in a jolting cart without springs to hospital. The taxis had been tried by Mr. South, in one of the London suburbs, and failed. When Mr. South arrived at the hospital and examined the patient the hernia had retired.

How admirably adapted some of our streets and roads are in this city and suburbs for a full trial of reduction of herniæ by "road jolting."

A most instructive and interesting case was mentioned to me by my late friend, Mr. Young, of Monaghan, surgeon to the county infirmary. A young man was admitted to his hospital, suffering from intestinal obstruction ; all the usual treatment short of operation had been tried without effect—even to the swallowing of a large quantity of quicksilver. The friends at last came for their son, having an idea, and probably correctly, that a *post-mortem* examination was contemplated. No persuasion on Mr. Young's part, or that of his staff, had any effect in deterring the patient or his friends from the risks attendant on his removal to a distance in the country, and accordingly he was placed in a common cart without springs, and with straw for a bed. The patient was jolted home, and on his arrival was put to bed ; shortly afterwards some of the young children in the house were seen on their hands and knees trying to *catch* the quicksilver, which had passed through the obstructed bowel. The result of this case was a perfect recovery, which Mr. Young attributed to the jolting having forced the quicksilver through the obstruction.

Cases have been recorded in which a surgeon had his patients, suffering from irreducible hernia with symptoms of strangulation, placed in a wheel-barrow with the legs hanging over the end, and this was pulled over a rough road. Sudden alterations in the position of the body sometimes effect reduction.

A case is recorded of an old man who was attended for a large irreducible scrotal hernia. The patient insisted on his surgeon placing him with his legs hanging over the rail at the foot of his bed, whilst his body was dependent. This plan succeeded admirably.

There was no hand or finger force employed in these cases.

In the ordinary forms of inguinal hernia the chief point of anatomical interest is the position occupied by the deep epigastric artery, and its avoidance when dividing the stricture.

The aperture through which a femoral hernia protrudes is very small in its normal state, and its surroundings are very dense and unyielding. This explains the extreme urgency of femoral hernia, and the failure of taxis, and danger of delay in operating, as compared with cases of inguinal hernia. In long-standing cases the ring becomes very large and the risk of strangulation less. The femoral ring, when dissected from within, is about large enough to admit the end of the little finger, and the opening is closed in normal state by Cloquet's septum crurale.

The naturally small size of the femoral ring is frequently narrowed by an irregular obturator artery coming off from the epigastric and encircling the ring except on its posterior border. A lymphatic gland often occupies the ring and may give rise to trouble in connection with femoral hernia. As a femoral hernia escapes through the femoral ring and bursts its way through the cribriform fascia, it

ascends from the bend of the thigh and passes on to the abdomen over the ligament of Poupart, and rests *on* Scarpa's fascia—a most important anatomical fact, as applied to the surgery of femoral hernia, as the coverings of the hernia are then very thin. The hernia, when ascended, expands and becomes oval in the long axis of Poupart's ligament, its neck dipping deeply into the hollow of the thigh.

In the male subject a femoral hernia so located is very liable to be mistaken for a direct inguinal, and may put the surgeon off his guard. The differential diagnosis, even in very fat patients, may be made by the position the neck of the tumour occupies, which in femoral hernia has Poupart's ligament above it, and the pubic spine on the same horizontal level and to its inner side, whilst in direct inguinal hernia Poupart's ligament is below the tumour, and the pubic spine lies inferior.

A femoral hernia may be constricted deep in the femoral ring, and a very large irregular obturator artery may add to the constriction—the sac may be very narrow at this point. The ligament of Hey, the fibres of Colles, the posterior margin of Poupart, and the ligament of Gimbernat, have all been blamed as the cause of strangulation, as also the omentum. As the description in the class-books of the fibres, known in Dublin as Colles' fascia of femoral hernia, is not very clear, I may be pardoned for referring to this important anatomical point as applied to the surgery of femoral hernia. The iliac portion of the fascia lata is attached above to the crest of the ilium, and to the lower edge of Poupart's ligament, as far inwards as the base of Gimbernat's ligament; its internal edge is limited and forms the falciform process, the concavity of which looks downwards and inwards, and presents a superior cornu (Hey's ligament), and an inferior cornu (Burn's ligament), with an intervening space.

The superior cornu is of variable strength, being thick in the male adult, but thin and often separated into bands in the female. It is attached (*i.e.*, the superior cornu) superiorly to Poupart's ligament, at the internal fifth of which it divides into two processes. One, superficial, is prolonged downwards and inwards to the pubic portion of the fascia lata—this is Colles' fascia of femoral hernia (see Colles' Surgical Anatomy, also Flood and Ledwich)—while the other process dips backwards and is attached to the linea ileo-pectinea and the base of Gimbernat's ligament. This constitutes Hey's ligament, and passes in front and internal to the femoral ring. I have observed and frequently demonstrated that Gimbernat's ligament in the male is a broader structure than in the female, and, in consequence, femoral hernia in the male is frequently more tightly constricted than in the female. The close proximity of the spermatic cord to the seat of stricture in femoral hernia is very important for the operating surgeon to keep before him.

The distinguished Abraham Colles, in his excellent treatise on Surgical Anatomy, published in 1811, says: "An intimate knowledge of the anatomy of the parts concerned is more necessary to guide our practice in crural hernia than in any other forms of the disease; the small opening at which the bowel protrudes, the firm and sharp edges, the great depth from the surface, the superficial situation to which the tumour often rises—all conspire to render the practice difficult in the hands of the best informed anatomists and most dexterous surgeons; and must add to the dangers arising from the errors of the ignorant and the attempts of the awkward."

Mr. Croly read notes of a number of cases on which he had operated.

I have operated in a femoral hernia in the *male* subject,

and recollect in my first case that the question arose at the operating table—Was the case femoral or direct inguinal? The position of the neck of the tumour, having Poupart's ligament above it and the pubic spine on the same horizontal level, and a little to the inside of it, at once settled the question. In inguinal hernia the spine of the pubes is behind and below the tumour.

OBTURATOR HERNIA.

CASE.—M. C., aged seventy years, was admitted into the hospital, under my care, on the 22nd of December, 1881, suffering from symptoms of intestinal obstruction.

History.—Complained for the first time on 17th instant; symptoms of colic. Opium draught was prescribed by a practitioner, and, on 19th, she vomited repeatedly contents of stomach. Enemata of turpentine and oil administered, and opium pills continued.

21st inst.—Countenance changed; vomiting stercoraceous.

22nd.—Admitted to hospital; collapsed. Hypodermics of ether, hot applications. Hernial outlets all examined; no tumour could be felt.

Diagnosis.—Internal strangulation. Patient did not rally; died on the 23rd instant, at 5 a.m., Monday after admission.

Post-mortem.—Extensive peritonitis. On searching for cause of obstruction I found an obturator hernia about the size of a small marble, involving portion of the ileum, protruding through the right obturator foramen, which I presented to the museum of the College, and now exhibit. The small intestine above the obstruction was much distended with gas and fluid. Having observed a well-marked Colles' fracture of left radius of old standing, I removed that specimen also, and it occupies a position in our museum.

So far as I know, Arnaud first described the obturator hernia. Duverney found two, one in each foramen, in the dissecting room. Garengéot says it is more frequent in females. Obrè, Sir A. Cooper, Cloquet, Vinson, and Bransby Cooper give cases. In addition to vomiting and pains in the groin, there is 'fulness (if tumour is large) in Scarpa's space, and it is necessary in the operation to divide transversely the pectineus muscle, to liberate the hernia.

Dr. John Barton, Demonstrator of Anatomy and Examiner in the College, described a double obturator hernia met with in a male subject in the dissecting room—an account of the hernia is published in the Transactions of the Academy, March 15th, 1889. There are only two specimens of obturator hernia in the Museum of the College—one presented by Mr. Kirby, the other by myself.

I have operated on several occasions on cases of strangulated congenital hernia, ages varying from one to seven years, and, at the Meath-street Dispensary I met with a very large number of such cases, the great majority of them I succeeded in reducing under chloroform. One of these cases is specially deserving of being placed on record. On June 8th, 1879, a boy aged seven years, residing at Windy Arbour, Dundrum, and who suffered from right congenital oscheoceles, developed symptoms of strangulation. My friend Dr. Usher, Medical Officer of Dundrum Dispensary, was not sent for until the symptoms had existed for several days. On seeing the patient, he advised his friends to bring him into hospital under my care. On admission he presented all the symptoms of strangulation and collapse. I proceeded to operate at once, assisted by my colleagues. The late Mr. Wharton was also present. I found coils of gut in a gangrenous condition; the stricture was divided and an artificial anus was formed. Notwithstanding the forlorn-hope aspect of the case, the boy recovered, and was so well that he was taken home on the 14th of August. He was then passing fæces through the natural passage. A fæcal fistula still remaining at site of operation.

I called occasionally, when in the neighbourhood, to see him. Several months subsequent to his return he became suddenly collapsed and died. I got an opportunity of making an examination of the parts, but could not find

any cause to account for his sudden death. I removed the portion of intestine showing the fæcal fistula, and presented it to the museum of the College. The late Dr. Barker, curator, wrote, saying the specimen was most interesting and the only one of its kind in the museum.

Congenital Scrotal Herniæ.—As the tunica vaginalis is thicker than the peritoneum, the contents of a congenital hernia are not so easily felt as in common rupture. In children the hernia generally contains intestine only, the omentum not being in early life sufficiently long to protrude.

In the operation for relief of strangulated congenital hernia, as the surgeon has to open the tunica vaginalis, Sir A. Cooper judiciously recommends that the membrane should not be opened low down—(1) because a sufficiency of it should always be left to cover the testis, and (2) because the spermatic artery and vein are situated obliquely on the front and lower portion of the tunica.

Pott and Willmer were of opinion that congenital inguinal hernia is liable to be strangulated by the neck of the sac, more frequently than common inguinal hernia.

Janvier, in 1809, recorded the case of a boy who, when at the age of seven years, forced the left testis into the abdomen; ten years afterwards, or when seventeen years old, the inguinal ring having become unusually contracted, the testis passed under the femoral arch with all the symptoms of strangulated hernia, on account of which he was obliged to undergo the operation.

An Enlarged Lymphatic Gland.—The following is a case in which an enlarged lymphatic gland occupied the right femoral ring and caused a fatal error in diagnosis. I was requested by a late eminent physician to see a case and take charge of it during his absence from town. The young woman had all the symptoms of peritoneal inflammation, and was treated for that disease for several days. On seeing the expression I at once suspected hernia, and when

looking at the abdomen I examined the femoral rings. At the right side I found a large and movable lymphatic gland which had escaped the physician's notice. On our retiring to talk the case over, I expressed a very decided opinion that there was a knuckle of gut behind the gland, and that the peritoneal inflammation was caused by strangulation. I advised cutting down, which was done as quickly as the instruments could be got. I removed the gland very cautiously and found a deep gangrenous gut adherent to the gland and also the ring. The stricture was divided, but, of course, the gut was not returned; an artificial anus resulted, but the patient died.

Case of Hernia (male adult); Gut ruptured by Truss.—A man had a struggle with a patient under his care some miles from the city, about fifteen years ago. The attendant suffered from left scrotal hernia; the gut was down below the truss; the pad of the truss went back with considerable force causing intense pain and collapse. The patient was seen shortly after the occurrence by my brother, Dr. Richard Croly, who recognised the very serious nature of the case, and accompanied the man to Dublin, and placed him under my care in the hospital. No tumour was visible; opium in large doses was administered. The patient died, and, on making a *post-mortem* examination, a laceration was discovered in the portion of the ileum which was struck by the slapping back of the truss. The peritoneal cavity contained the contents of the bowel. The specimen was shown at a meeting of the Surgical Society.

It is of interest to note that the tunica vaginalis in children remains longer open on the right than on the left side.

Ventral hernia, described by Celsus, may appear at any part of the abdomen. The intestine is always contained in a sac of peritoneum. Sir A. Cooper imputes the disease to dilatation of the natural foramina for the transmission of vessels, congenital deficiencies, lacerations, wounds of the abdominal muscles or their tendons. *Herniæ*, in the course of the linea alba, sometimes occur so near the umbilicus that they are liable to be mistaken for true

umbilical ruptures. Umbilical hernia has a roundish neck or pedicle, at the circumference of which the aponeurotic edge of the umbilical ring can be felt, and there is no wrinkling of the skin. Hernia of the linea alba has a neck of oval form and the tumour is oval, and the edges of the opening in the linea alba can be felt; if the tumour is near the umbilicus the cicatrix of the navel can be seen on one side of it.

Last summer a young gentleman consulted me about a swelling at one side of the linea alba. I found a large protrusion of intestine when he coughed, easily reducible when he lay down. The history he gave was that on walking over a crossing a car came round the corner suddenly, the point of the shaft struck him in the abdomen. Two fingers could be introduced easily into the rent in the abdominal muscles.

The diagnosis of inguinal hernia is usually unattended with difficulty; not so with the femoral. Direct inguinal, in the male, and femoral, when the tumour has ascended over the ligament of Fallopius, may be confounded with each other. To make a differential diagnosis before employing the taxis or operating is of vital importance. In my first operation for femoral hernia in a man, many years ago, the question arose at the operation table. An enlarged lymphatic gland has often deceived the practitioner, but, if symptoms of strangulation exist, the surgeon should cut down and he will surely find a portion of intestine strangulated and most likely adherent to the back of the gland, which should be removed with great gentleness and care. I have seen a cyst in the region of the femoral ring co-exist with strangulated femoral hernia, and I have alluded to the case. Femoral hernia, when long strangulated and inflamed or gangrenous, may simulate bubo, but in all such cases it is clearly the duty of the surgeon to cut down and explore. Abraham Colles once cut down on a tumour in the inguinal canal, which was painful and caused vomiting.

The case was one of acute orchitis occurring in an undescended testis. He advises the surgeon before operating to examine the scrotum. Of course, a hernia and an inflamed undescended testis may co-exist.

I never pinch up the skin or transfix in femoral hernia, as the coverings of the intestine are so thin, especially when the hernia has mounted on the abdomen; it may be done safely by a very experienced hand, but the example to students is not good.

In the operation for femoral hernia in the male, if the division of Poupart's ligament is considered necessary, the spermatic cord should be raised with a blunt hook or bent probe so as to avoid injury of the spermatic vessels. An irregular obturator may be felt through the ring.

Arnaud, in the examination of the body of a man aged twenty-two years, who died a few minutes after the operation for incarcerated femoral hernia, found the artery of the spermatic cord had been divided.

In my own operations for femoral hernia I make a single long incision over the tumour, and if the hernia has ascended over Poupart's ligament, I commence well above the tumour and extend the incision nearly to the lower part of the saphenous space. In the complete femoral hernia I have almost invariably found the seat of stricture at Colles' fibres or Hey's ligament. In some instances, I have made a few notches in the lower border of Poupart. If more room is needed the simple incision can be made—like the inverted Λ of Sir A. Cooper, the inverted \perp of Fergusson, or the sloping incision of Lister; and only on one occasion have I cut Gimbernat. If the stricture is in the neck of a narrow sac, having opened it and passed my finger round, I draw out the sac with catch forceps, so as to widen the mouth and neck of the sac.

In operating for femoral hernia I dip the point of my

index or little finger into the ring almost at a right angle with the thigh.

Abraham Colles recommends, in operating for femoral hernia, that the patient's shoulders should be raised, and the legs allowed to hang over the end of the table. He does not believe Gimbernat's ligament ever causes the stricture; his fascia lies midway between the femoral vein and the spine of the os pubis.

Abraham Colles made the inverted incision of Sir A. Cooper, for the purpose of exposing the line of adhesion between the iliac and peritoneal portions of the fascia (Colles' fibres), and after the division of the stricture he proceeded to relax Poupart's ligament. Cutting forwards, divides Colles' fibres; inwards and slightly upwards, frees Hey's. The finger should be dipped in at right angles with the thigh in the operation for femoral hernia. Gimbernat's operation of dividing superficial and deep fibres, by one and the same motion of the knife, and introducing the knife into the abdomen, would certainly sever an irregular obturator. Drawing down the bowel for the purpose of seeing that it is sound above the seat of stricture is very important before returning the parts into the abdomen. This is especially needful in cases where the strangulation has existed any time. When omentum is found in the sac of a femoral hernia it is often somewhat the shape and size of an "auricular appendix," and on raising the portion of omentum like the lid on a box, the knuckle of gut is seen often about the size of a damson plum, and, like the fruit, varies much in colour. The operation for relief of femoral hernia requires more care and skill than the inguinal forms, and when the intestine has ascended on the abdomen the coverings are very thin—merely integument, superficial fascia, fascia propria and sac.

Symptoms.—The most prominent symptoms of strangulation are: tumour in hernial outlet, as a rule not painful to touch; constipation; vomiting, often sour, and at first merely contents of stomach, then bilious, and lastly stercoraceous. “Hernial face” often more marked (so far as my observation goes) in femoral than in the other forms; sudden “ageing” of the patient and signs of shock, which, in advanced cases, is not unlike the collapse of Asiatic cholera. Pain in meso-gastrium, often referred to umbilicus, of a colicky nature; no flatus passed per anum; quick pulse and general restlessness; great thirst and longing for drinks; hiccough, which becomes very distressing, and abdominal tension; sometimes distension and frequently retention of urine. In advanced stage the tumour, especially when femoral, gets discoloured, and resembles bubo; may be resonant on percussion, or may crepitate when gangrene sets in. There are some cases so urgent that it is not advisable to lose any time in the trial of means to produce reduction; the delay of a few hours may cut off all hope of success, when a speedy operation might have saved the life of the patient. Sir A. Cooper considers that pain on pressing the belly and tension point to the necessity of immediate operation.

Mr. Guthrie is in favour of immediate operation. Persistent vomiting alone would justify herniotomy, but that symptom I have known to be absent, and yet acute strangulation existed. Hiccough is not always a sign of gangrene, and it may last several days after operation.

Hernial sacs vary; we meet thin sacs, thick sacs, sacs with narrow necks, hour-glass and the “congenital” and encysted forms. The difficulty in herniotomy is the recognising of the sac. Fluid may be present. When the sac is translucent and the fluid clear, it greatly facilitates the operator. Omentum is often seen in the sac, but fat on

fascia propria is occasionally mistaken for omentum, and was observed in my last femoral hernia operation. The question of opening or not opening the sac cannot be decided, as a rule, at the time of commencing the operation, and my own experience has taught me to open the sac in almost every case. Now that the radical cure is part of herniotomy, the question is practically set at rest.

The sac of a femoral hernia is exceedingly narrow at its neck; where its body begins it expands in a globular form. The sac of an oblique inguinal hernia is generally oblong or pyramidal. The body of the sac of a femoral hernia makes a right angle with the neck by being thrown forwards and upwards—a fact which it is most important to remember when trying to reduce by taxis. The tumour formed by the body of the sac is oval and nearly transverse; the outer and rather smaller end of the swelling is somewhat higher than the inner.

According to Sir Astley Cooper, the peritoneum, in forming a hernial sac, “is not dragged from its natural situation, but becomes elongated by gradual distension; and it is usually not only lengthened but slightly thickened, for a long-continued pressure of moderate force will produce an elongation and thickening of fibre, though a greater degree will bring about an entire absorption of parts.”

The seemingly great thickness of the hernial sac and its apparent divisibility into several layers in old herniæ, are owing to the state of the coverings of the sac—the sac itself being generally but little thicker than the peritoneum.

Characters of Fluid in Sac.—It varies in character, according to duration of strangulation. When the sac is opened fluid escapes; its consistence, colour, and odour vary in different cases, viz:—

1. Pale-yellow, clear and bright when strangulation is quite recent—intestine deep red ;
2. Dark-brown when strangulation has existed many hours—intestine of a purple tint ;
3. Coffee-coloured and turbid after violent and prolonged taxis—intestine dark purple, inclining to black ;
4. Brownish-yellow and containing blood, coagula, flakes of lymph, fæculent odour—intestine, omentum, or vermiform appendix, approaching or passed into gangrene ;
5. Gas through fluid and bubbles—hernia ruptured.

The small intestine is more frequently protruded than the large one ; and the ileum more frequently than the jejunum, in consequence of its greater proximity to the rings.

The viscera, which are more frequently met with than any others in a hernia, are the omentum and the ileum, the next in frequency is the colon, then the cæcum, and lastly the jejunum. Sometimes the appendix cæci is the only part found in the hernial sac, and may produce symptoms of strangulation. Three cases containing the vermiform appendix occurred in my practice.

Herniæ are more frequent on the right side of the body. Can this be explained by the greater exertion on the right side of the body ? The smaller a hernia the greater the danger and the less likely the taxis is to succeed. Hernia consisting of gut only is more dangerous than gut and omentum. Herniæ which become strangulated immediately on their formation are very dangerous. Cæcum in sac is very difficult to reduce.

In effecting reduction by taxis, gut will be known by its going up slowly at first and then suddenly and with a noise. Omentum returns slowly to the last portion which must be pushed up with the fingers. Taxis succeeds better as a

rule in inguinal than in femoral hernia. When a rupture becomes painful, taxis should not be continued. As a rule strangulated herniæ are not painful.

Strangulated herniæ (says Scarpa) very frequently mortify from the negligence of the patients and their repugnance to submit to an operation; and perhaps, still more frequently, from the effects of the taxis unskilfully exercised by uninformed surgeons, who are determined at any price whatsoever to accomplish the reduction.

Peritonitis, enteritis, shock, and exhaustion are amongst the most frequent causes of death in hernia, and Leichtenstern adds septic pneumonia. Antiseptics are most valuable in hernia operations. Some advocates of Petit's operation assigned as causes of inflammation, following herniotomy exposure of the bowel to air, change of temperature and handling. Lawrence ascribed the mischief not to these agents, but chiefly to the long-continued pressure of the stricture, owing to the operation being too long delayed, and to an injudicious and too frequent use of the taxis previous to the operation.

The operation is justifiable and necessary, when the patient has been brought fully under the influence of an anæsthetic and the taxis has been fairly, fully, and skilfully tried. By no other means is there hope of saving life.

Position of Patient for Employment of Taxis.—Position of body: inclined plane, with thighs bent towards trunk. The inverted position is dangerous, especially in femoral hernia. Effect: it relaxes the fascia and the aperture through which the hernia passes; flexion also relaxes the abdominal, internal iliac, and psoas muscles. In oblique inguinal hernia the pressure should be directed upwards and outwards along the corner of the spermatic cord—time about a quarter of an hour. In flexing the thigh in femoral hernia the surgeon should be most careful not to

flex too much for fear of pinning the gut between the thigh and pelvis, which might rupture the intestine.

Laying the Patient on the Sound Side and Flexing.—In trying taxis in femoral hernia the surgeon should stand with his back to the patient and first try to draw down the intestine from above Poupart's ligament. The treatment I now adopt when called to a case of external strangulation is, warm bath—unless contra-indicated—full enema, administered by means of a long tube; in suitable cases, ice to the tumour; then anæsthetic, and if very gentle persuasion fails, herniotomy there and then. Every moment is of vital importance, and upon the skill, judgment, and firmness of the surgeon the lives of his patients hang. For many years I have given up opium, tobacco injections, and venesection, as my experience has taught me that such treatment was most unsuited, if not dangerous, in the majority of cases.

Verheyn, in 1710, pointed out the nature of femoral hernia, previously confounded with inguinal. The opening through which it passes is called "crural opening" (Gimbernat); "femoral ring" (Hey); "crural canal" (Cloquet). I think the terms upper and lower superficial and deep rings, objectionable terms. Morgagni never met with the crural hernia in the male; Cooper's experience was almost the same; Arnaud's, also; Scarpa examined a femoral hernia in a male subject; Hesselbach thought it was often overlooked on account of its small size.

Sir C. Bell records a case of inguinal hernia occurring in a gentleman. On his death a small femoral hernia was found concealed by an inguinal rupture and mass of fat.

Abraham Colles says:—"Femoral hernia is liable to strangulation before it can be felt externally. Some fatal effects have resulted from mistaking strangulated crural hernia for inflammation of some of those lymphatic glands which lie in the vicinity of the crural ring. The deep

situation of the hernia, together with its very small size, have contributed to render the mistake more frequent. In some instances the difficulty of discriminating is considerably increased by an enlarged lymphatic gland lying anterior to a very small hernia."

Taxis in Femoral.—Endeavour to bring down the tumour into the hollow of thigh, and then sink it into the femoral ring; pressure upwards and slightly outwards; as femoral hernia ascends on abdomen, coverings are very thin.

When a femoral hernia is incomplete, it presents itself as a round firm swelling. The œdema of the thigh and foot, and numbness of the limb, referred to by Hesselbach, I have never seen. That the mortality arising in strangulated femoral hernia is very large, all agree, and the death-rate is largest where strangulation occurs on fist descent. The bowel in these cases should be liberated at once if taxis, tried under chloroform, fails.

Small, recently-developed herniæ are more frequently strangulated than large ones, and those which have existed some time.

Seat of Stricture.—In most of my cases of strangulated inguinal hernia in the adult male the seat of stricture existed in the sac, especially in those cases where a truss had been worn for a long time, and many of the sacs, in such cases, were hour-glass in shape. In my cases of congenital inguinal hernia I found the stricture situated at the internal abdominal ring. In my femoral hernia cases I have found "Colles' fibres" and "Hey's ligament" most frequently the cause of strangulation. In a few cases I divided some fibres of Poupart's ligament in the male, merely making "notches" in the inferior border of the ligament so as to avoid injuring the vessels in the spermatic cord. I only once divided the ligament of Gimbernat.

If a femoral hernia lies very deep in the ring and is

very small, it may be constricted in the neck of a narrow sac, and a large and irregular obturator artery may assist in causing the constriction in a small ring. Dupuytren, Liston, Skey, and others have detailed cases of wounded irregular obturator arteries.

Sir A. Cooper declares that the stricture in femoral hernia is never situated at Gimbernat's ligament, but at the crural arch just where the viscera leave the abdomen. The aperture is very small through which the viscera protrude in femoral hernia. How much greater the constriction is, therefore, than in inguinal! Consequently, how much more rapid the symptoms are, and how much less frequently the taxis succeeds, and how much more dangerous delay proves!

Hesselbach and Langenbeck do not believe Gimbernat's ligament is the cause of strangulation. Strangulation may occur deeply or superficially. Gimbernat's ligament is broader in the male, and this, to some extent, explains why femoral hernia is rarer in the male than the female.

Femoral hernia, frequent in women who have had children, is very seldom met in young girls.

The late Professor Spence, Surgeon to the Edinburgh Royal Infirmary, records a case of femoral hernia in a man. The caput cæcum was contained in the sac.

The co-existence of a "femoral" or "obturator" with inguinal hernia is most important to remember, and I have seen and recorded such instances. The surgeon should not be thrown off his guard by a large hernia, which, although irreducible—at all events, so far as the sac and omentum are concerned—may not be causing the symptoms. Search all the hernial outlets before operating.

Hernial Knives.—I have long been of opinion that the hernial knives of Sir A. Cooper, Dupuytren, and others are too large and the blunt portion unnecessarily long—a shorter knife, which, of course, has sufficient strength, answers every

purpose; and I have found Dupuytren's convex-bladed knife divide the stricture in femoral hernia far more easily than the concave-bladed knife of Sir A. Cooper. In femoral-hernia operation I never introduce the knife into the abdomen or into the femoral ring, and I have always used the nail of my little finger as a guide to the knife in freeing the stricture. I am afraid of and never employ the director for such purpose. I have given up to a great extent the use of the director in many operations, but I use it occasionally in the division of the coverings of some herniæ. The example to students is important, and I advise young operators not to discard the director.

The hernia knives I now exhibit—one a modification of Sir A. Cooper's, the other of Dupuytren's—I find much more satisfactory and safer than the knives in ordinary use, and were made specially for me by Mr. Smith (Corcoran and Co., Stephen's-green).

If the incision is confined to Colles' fibres, Hey's ligament, and notching Poupart, an irregular obturator could not be divided, and in all my hernia cases, I am thankful to say, I never cut the irregular vessel, which at times is very large. The following of the intestine with the finger (properly antisepticised) safely into the abdomen is very important, and I have observed that a difficulty of getting the gut to "retire," when the stricture has been divided and sac opened, is a bad omen, some internal band or gripping by omentum beyond reach being the cause of trouble within the abdomen.

Scarpa says: "Surgeons were not ignorant, even before the time of Arnaud, that the incision of the Fallopian ligament, to free from strangulation the femoral hernia in the male, was a very dangerous operation, from exposing the patient to an irreparable and fatal effusion of blood into the cavity of the abdomen, and cannot be ascribed to any other circumstance but the injury of the spermatic artery."

I have found entero-epiploceles of every form, as a rule, do better after operation than cases where gut only was strangulated, and I have never seen any bad effects follow the ligaturing of the omentum if large, and cutting away the portion in the sac. I have met with the vermiform appendix on three occasions in hernial sacs, twice in oscheocele, and once in metrocele; on the last occasion the vermiform appendix bore the pressure of the stricture and saved the gut, so that, on one occasion at least, it has been useful.

The great change and improvement in herniotomy in the present day is the performance at the same time of the "radical cure," and that procedure is an additional reason for early herniotomy and abolishing taxis, for if the gut is reduced by taxis with all its risks, the patient is very liable to strangulation of a fatal nature at no distant period. The structures divided in herniotomy are chiefly fascial and tendinous, and in old herniæ the peritoneum has ceased to be a delicate membrane, having deserted its normal position and become thickened by the pressure of trusses, &c.

After herniotomy I allow the stomach to rest, giving a little ice to relieve thirst. I feed the patient "per rectum." My cases this session did splendidly by this treatment. If the bowels act at once after herniotomy, the case generally recovers; the same applies to the early passage of flatus, which I have always looked upon as a most favourable sign. The difficulty I have always experienced in herniotomy is the recognising of the sac. This I call the "halting point in the operation." The performance of the "radical cure" at the same time as the herniotomy, is a great advance in the surgery of hernia, and I have found ligaturing the sac, or stitching the end, a safe and perfect procedure. I avoid twisting in such cases as a dangerous operation.

Reviewing the large number of cases of strangulated herniæ, which I had an opportunity of observing when a

student and house-surgeon, and from the experience I have since gained by my own cases, I believe that herniotomy would become one of the most successful of the great operations of surgery, if the taxis was skilfully practised, a careful selection made of cases suitable for its employment, the time strictly limited, and only one set of hands (assuming they are the right sort) allowed to manipulate. No one can be so interested in the employment of taxis as the surgeon who is to be the operator if taxis fails, and who will have all the anxiety and responsibility of the case.

Some years ago it was too much the habit of holding consultations in strangulated hernia—trying all sorts of remedies, and having the taxis practised by resident officers and each member of the staff, and thus losing much valuable time.

Lassus gave full doses of opium for the purpose of effecting reduction, sometimes apparently with success, and the experienced Hey speaks of its occasional usefulness; it certainly diminishes the sensibility of the hernia and tranquillises the alimentary canal. As regards its supposed effect in relaxing a tight stricture, seldom formed by muscle, it, in my opinion, cannot be satisfactorily explained. I have almost completely given up the use of opium in hernia cases.

During herniotomy I have frequently perceived a fœtid odour from the sac, which is caused by transudation, and I have expected and found either gut, omentum, or vermiform appendix in a gangrenous condition when I opened the sac. To the uninitiated or inexperienced this gangrenous odour may give rise to the idea that the gut, not the sac, had been exposed or opened. The educated nose will detect the gangrenous from the fæculent odour.

That there is always a risk in opening a serous cavity no

one can deny, but I am inclined to believe that the risk of opening the sac in herniotomy has been much exaggerated, and that peritonitis and enteritis are really produced by strangulation, prolonged taxis, and waiting for symptoms. As a proof of the correctness of this view, I ask, do we not now open the sac in the operation for the radical cure, and how very rarely, indeed, do we see any inflammatory or dangerous symptoms arise?

MR. WHEELER agreed with Mr. Croly that taxis was often abused. He thought the words "traction and compression" described the manipulation of returning a hernia, better than the word "taxis." In his practice he had given up giving an anæsthetic before performing taxis. It only rendered the patient insensible. He did not use any kind of opium. The earlier the operation was performed the better was the chance of recovery.

MR. F. NIXON said that he agreed with Mr. Croly as regards the constricting bands formed by the superficial expansion of the falciform process described by Mr. Colles. Gimbernat's ligament only unfrequently caused constriction. Hey's ligament was a much more common cause. He thought the division of Poupart's ligament objectionable, as it weakened the abdominal parietes, and there was also danger of wounding the spermatic cord. In many cases of hernia, the opening of a pair of forceps will often stretch the constricting bands. He did not agree with Mr. Wheeler about not using an anæsthetic, as it produced muscular relaxation, and greatly facilitated the return of the hernia.

MR. CROLY, replying, said that he had done close on 150 operations for strangulated hernia, and never had any hæmorrhage resulting. He considered inversion of the patient in a case of strangulated hernia a very dangerous practice.

SECTION OF OBSTETRICS.

CLINICAL REPORT OF THE ROTUNDA LYING-IN HOSPITAL FOR YEAR 1892-1893.

By WILLIAM J. SMYLY, M.D.;

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Assistants.

[Read in the Section of Obstetrics, November 23rd, 1894.]

DURING the year ending November 1st, 1893,—

1,288 patients were confined in the hospital.

2,105 „ „ at their own homes.

3,393 cases relieved.

*Table showing Number and Nature of Cases in Extern Maternity
for Year 1892-93.*

Total number	•	•	•	2,105	Secondary hæmorrhage	•	•	1
Abortions	•	•	•	247	Prolapse of uterus	•	•	2
Hydramnios	•	•	•	9	Adherent placenta	•	•	18
Carneous mole	•	•	•	1	Deformity of pelvis	•	•	2
Face to pubes	•	•	•	9	Version	•	•	15
Face	•	•	•	3	Forceps	•	•	28
Brow	•	•	•	3	Mania	•	•	1
Breech and lower extremities	•	•	•	68	Episiotomy	•	•	1
Shoulder and upper extremities	•	•	•	7	Deaths from non-puerperal causes	•	•	2
Twins	•	•	•	29	Mortality	•	•	5
Prolapse of funis	•	•	•	7	Children dead-born	{	Fresh	46
Placenta prævia	•	•	•	16		{	Macerated	11
Accidental hæmorrhage	•	•	•	14	Hydrocephalus	•	•	1
Post-partum do.	•	•	•	24	Ophthalmia neonatorum	•	•	2

*Table showing Nature of Cases in Rotunda Lying-in Hospital
for Year 1892-93.*

Total number of labours	-	1,288	Induction of premature labour	-	6
Primiparae	-	458	Turning	-	11
Abortions	-	41	Forceps	-	45
Hyperemesis	-	1	Perforation	-	1
Hydramnios	-	3	Episiotomy	-	2
Carneous mole	-	1	Symphysiotomy	-	3
Face to pubes	-	8	Eclampsia	-	9
Face	-	3	Insanity { Mania	-	3
Brow	-	5	{ Melancholia	-	1
Breech and lower extremities	-	43	Phlebitis	-	4
Shoulder and upper extremities	-	3	Phlegmasia	-	1
Twins	-	19	Embolism	-	1
Prolapse of funis	-	12	Deaths from non-puerperal causes	-	4
Placenta prævia	-	8	Morbidity ^a	-	60
Accidental hæmorrhage	-	12	Mortality ^b	-	18
Post-partum do.	-	24	Children still-born {	Fresh	66
Secondary do.	-	1		Macerated	26
Prolapse of uterus	-	1		Putrid	3
Infusion intravenous	-	2	Spina bifida	-	2
Do. subcutaneous	-	1	Anencephalous	-	4
Adherent placenta	-	19	Cephalhæmatoma	-	1
Myoma	-	1	Ophthalmia	-	3
Deformity of pelvis	-	10	Fœtus papyraceus	-	1

In our former Report of the Lying-in Hospital we stated that the morbidity of the patients delivered in the wards was a safer test of the precautions taken to guard them from septic infection than the actual mortality. The present Report confirms that opinion, for the number of deaths during the past year from that cause would lead one to imagine that our precautionary measures had been less successful than in the two preceding years, when we were fortunate in having no fatal case to report. The morbidity, on the other hand, is decidedly less, and would lead to an opposite and, we believe, more correct conclusion. By morbidity is meant the number of cases in which the temperature even once exceeded 100°. The details of the fatal cases are even more convincing, three out of the five having been

^a 4.5 per cent.^b 1.3 per cent.

admitted in an advanced stage of the disease, a fourth was infected from an abscess in the pubic symphysis, the genital canal remaining healthy; and the fifth was the result of a surgical operation, and is fully detailed under "symphysiotomy."

Table of Deaths.

Name	Admitted	Delivered	Died	Cause
1. M. -	Dec. 17, '92	Dec. 18 -	Dec. 18 -	Eclampsia
2. M. M'C.	" "	" "	" "	Ruptured cervix
3. M. N. -	Jan. 1, '93	Jan. 27 -	Jan. 27 -	Eclampsia
4. M. A. H.	Mar. 9, '93	Mar. 10 -	Mar. 10 -	Phthisis
5. M. M'D.	April 7, '93	April 7 -	April 8 -	Septicæmia
6. M. F. -	" 2, '93	" 3 -	" 21 -	Embolism
7. M. H. -	May 31, '93	May 31 -	June 1 -	Post-partum hæmorrhage—Myoma
8. M. P. -	June 19, '93	June 19 -	" 19 -	Mitral stenosis
9. M. M'C.	" 24, '93	" 28 -	July 1 -	Cerebro-spinal meningitis
10. L. C. -	" 25, '93	" 25 -	" 14 -	Septic pyæmia—Ruptured symphysis
11. C. B. -	July 18, '93	July 18 -	" 18 -	Accidental hæmorrhage
12. M. O'C.	" 24, '93	" 24 -	" 29 -	Sepsis
13. M. A. R.	Aug. 31, '93	Undelivered	Sep. 9 -	Uræmia
14. K. L. -	Sep. 24, '93	Sep. 24 -	" 26 -	Peritonitis
15. K. D. -	" 30, '93	" 30 -	" 30 -	Accidental hæmorrhage
16. S. W. -	" 25, '93	" 25 -	Oct. 20 -	Mania
17. L. M'G.	Oct. 29, '93	" 29 -	Nov. 9 -	Sapræmia

CASE I.—M. M'D., aged thirty-four; 7-para; admitted April 7th, 1893, was sent in from the country in advanced stage of septicæmia. Temperature on admission, 103.6° ; pulse very feeble, and too rapid to be counted. Breech presenting—vagina douched with creolin—a foot brought down and child extracted, deeply

asphyxiated but resuscitated. Mother died the day after admission. Autopsy—Purulent peritonitis, liver fatty, spleen enlarged, old pleuritic adhesions. Child developed cellulitis of the neck and died on the second day.

CASE II.—L. C., aged twenty-eight; 3-para; admitted with temperature $100\cdot6^{\circ}$; six and a half hours in labour; delivered of a dead female child, weighing nine and a half pounds. After delivery she was unable to turn in bed, and screamed with agony when moved. The pain was referred to the symphysis pubis, and there was tenderness on pressure over the joint. Diagnosis, ruptured symphysis. Third day temperature rose to $102\cdot2^{\circ}$; sixth day it reached 104° ; pulse 140; severe rigors on the succeeding days and other symptoms of pyæmia. The lochia, however, continued normal, and there was no tenderness over uterus. Death on the 11th day. Autopsy—Separation of pubic symphysis, the space between the bones being filled with pus; pyæmic abscesses in various organs; uterus and appendages healthy.

CASE III.—M. O'C., aged twenty-six; 1-para. The patient was sent into hospital after an unsuccessful attempt to deliver with forceps had been made by a practitioner outside. On admission she was bleeding profusely from an extensive laceration of the vaginal wall and perineum. She was so collapsed that immediate delivery was postponed. The vagina having been douched out with hot water and creolin, it was plugged to control the hæmorrhage and bring on labour pains. Ten hours after admission temperature rose to 102° . A dead child was extracted with forceps. Temperature next day 102° ; on the third day it rose to 104° ; pulse 150; vaginal wound sloughing. She died of septicæmia on the fifth day.

CASE IV.—K. L., aged twenty-nine; 8-para. Temperature on admission $102\cdot9^{\circ}$, delivered of a seven months' fœtus which only survived an hour and a half; temperature same evening 105° . Abdomen tympanitic, catarrhal pneumonia of left lung. Died third day. Autopsy—Purulent peritonitis, pleuro-pneumonia on left side.

ABORTIONS.

Forty-one women aborted, eighteen of whom required no assistance. In three the uterus was emptied by the finger alone, and in nineteen the uterus was curetted after the removal of the ovum. One patient only was plugged.

The general rules adopted in the treatment of abortion were to leave the case to nature, unless there were special indications for direct interference. Opium was given to stop pains, and *hydrastis canadensis* for hæmorrhage. The indications for interference were—First, hæmorrhage. In these cases the os was generally sufficiently dilated to allow of the immediate emptying of the uterus—in one case only was there severe hæmorrhage with an insufficiently dilated os; she was plugged. Second, incomplete abortion. If the fœtus or any other part of the ovum had escaped, the same rule was adopted as in labour at term—viz., to wait half an hour, and if the rest of the ovum did not come away, to empty the uterus; further delay could serve no good purpose, and would expose the patient to the risks of hæmorrhage and putrefaction, necessitating removal under less favourable circumstances. Excepting the one patient who was plugged there was no abnormal rise of temperature or return of hæmorrhage.

BROW PRESENTATIONS.

There were three brow presentations; two cases were terminated by forceps. The other was left to nature.

FACE PRESENTATIONS.

Four face presentations, all of which terminated naturally.

CROSS BIRTHS.

There were three cases of transverse or oblique presentation. In one, cephalic version was performed by external manipulation before the membranes had ruptured, and the child was expelled alive by the natural efforts. The other two children were dead and macerated. One was delivered by bipolar version and the other by internal version. All the mothers did well.

PROLAPSE OF FUNIS.

This complication occurred twelve times with the loss of four children—three times in twins, twice with the second child, and once with the first. In two cases of symphysiotomy the children were saved. The forceps was used twice, one child was alive. Two cases of breech with rapid extraction had the same result. In one case of accidental hæmorrhage the child was alive. Manual reposition of the cord was tried in every suitable case.

PLACENTA PRÆVIA.

There were eight cases with one death, the result of pulmonary embolism. In three cases the children were born dead. Two cases were left to the natural forces of labour. Forceps was applied in one instance, and in the remaining five cases the treatment consisted of rupturing the membranes, turning and bringing down a leg through the cervix; then leaving the woman to be delivered by the natural process. In some instances the foot remained protruding through the vulva for hours before pains were excited, but there was no hæmorrhage.

CASE.—M. F., aged twenty-eight; 5-para. Delivered, April 3, 1893. Partial placenta prævia, os size of five-shilling piece, version, foot brought down, phlebitis of varicose vein in calf of right leg. Symptoms of pulmonary embolism set in on 18th day. *Post mortem*—Clot in pulmonary artery.

ACCIDENTAL HÆMORRHAGE.

Twelve cases with two maternal and six foetal deaths. In three cases no special treatment was required. In three version alone was adopted, while the remaining six cases were plugged and bound with a tight binder. Version was performed subsequently in three of these cases as further treatment.

The vaginal plug, when efficiently applied, before the rupture of the membranes, stopped the hæmorrhage in every instance, and had the further advantage of inducing labour pains and causing the rapid dilatation of the os.

Accidental Hæmorrhage—Fatal Cases.

CASE I.—C. B., aged thirty-two; ninth pregnancy. Patient very anæmic on admission, profuse flooding, os undilated, vagina douched with creolin lotion and plugged. Labour pains having set in the plug was removed, os size of a shilling, douched again; version performed by bipolar method and foot brought down, child slowly extracted. Severe post-partum hæmorrhage. Patient collapsed.

CASE II.—K. D., aged thirty; sent in from external maternity. On admission was blanched, temperature subnormal; pulse 140. Plug removed, membranes having ruptured long before; os size of two shillings, rigid; head presenting; no foetal heart. Perforation; extraction with cranioclast being impossible, version performed. Patient collapsed. Cervix had to be divided with scissors, *post-mortem* to complete delivery.

POST-PARTUM HÆMORRHAGE.

There were twenty-four cases of post-partum hæmorrhage. Six were traumatic, due to lacerations of the cervix—in three the rents were closed by suture, and in three plugged with iodoform gauze. The others were atonic—viz., six, the placenta or membranes had to be removed manually; two plugged with iodoform gauze; all douched with hot water. The perchloride of iron was not used in any case. One patient with a submucous myoma died.

CASE.—M. H., aged thirty-one; 8-para; admitted May 31st, 1893. Normal labour, uterus remained abnormally large, clots pressed off, uterus contracted well; hæmorrhage ceased. One hour after delivery hæmorrhage returned; large quantity of clots expressed, uterus again contracted well and hæmorrhage ceased. Four hours later hæmorrhage recurred, uterus again relaxed, clots again expressed, hæmorrhage controlled. Patient rallied for a

time, but gradually sank and died. Autopsy—A submucous myoma about as large as a Tangerine orange was found attached to the posterior wall of the fundus uteri.

DEFORMED PELVES.

There were ten cases of contracted pelvis; eight were flattened pelves, and two generally contracted flattened pelves. The measurements were taken with Skutsch's pelvi-meter, or Dr. Bullit's modification of the same.

Four of these were delivered by forceps—one by perforation; two by induction of premature labour, and three by symphysiotomy.

Three mothers died, two from improper use of the forceps previous to admission, and one from symphysiotomy. These cases are detailed under septicæmia, forceps and symphysiotomy. In the treatment of these cases, where a living child can reasonably be expected, we do not now employ prophylactic version, but rely more upon the powers of nature to mould the foetal head to the brim, and adhere as strictly as possible to the rule only to employ the forceps in those cases where the head has already passed the brim by at least its greatest transverse diameter. The cases of M. M'C., M. O. C., and M. A. D., are painful illustrations of the importance of this rule. Another very instructive example was that of M. B., aged twenty-seven, admitted 21st August, 1893. Head presenting movable above brim. Labour had commenced at 6 30 a.m., membranes ruptured 9 15 p.m. Strong labour pains. Evening of 22nd, head was fixed in brim which was contracted. Large caput succedaneum low down in pelvis, foetal heart 130, os fully dilated, chin of foetus a hand's breadth above symphysis pubis. Neville's forceps applied, and an ineffectual attempt made to extract the child. Next morning forceps again employed and child extracted alive without difficulty.

VERSION

(November, 1892, to November, 1893).

Version was performed eleven times. In two instances, external version was accomplished. In one of them a transverse presentation was changed into a vertex. In the other a head was converted into a breech as part of the treatment in ante-partum hæmorrhage.

The indications for version were :—

Prolapse of cord	-	-	-	1
Craniotomy	-	-	-	1
Oblique positions	-	-	-	2
Placenta prævia	-	-	-	5
Accidental hæmorrhage	-	-	-	3

Forceps were used in forty-five cases, twenty-seven of which were primiparæ.

Indications :—

Delay, <i>i.e.</i> , over five hours in second stage	-	16
Threatened rupture of uterus	-	1
Rise of temperature	-	7
Phthisis	-	1
Failure of foetal heart	-	10
Placenta prævia	-	1
Prolapse of funis	-	2
Occipito-posterior positions	-	5
Brow presentations	-	2

Three mothers and seven infants died.

One patient developed acute congestion of the lungs the day after delivery, which only lasted twenty-four hours, and which we attributed to the administration of chloroform in close proximity to a candle. The perineum which was lacerated failed to unite and developed a puerperal ulcer. She went out well on the 18th day.

One mother died of septicæmia and is recorded under that heading, another of phthisis; the third, M. M.C., aged thirty-nine, 1-para, had been four days in labour before admission,

and an unsuccessful attempt to deliver with forceps had been made by a practitioner outside. Admitted in a state of collapse. The pelvis was deformed and the head freely movable above the brim. Cervix torn and hanging down into the vagina by a narrow pedicle. Profuse hæmorrhage. Delivery was postponed owing to condition of the patient. Vagina plugged to control hæmorrhage, and stimulants given. Patient had some sleep during the night, and the next morning a dead fœtus with a fractured skull extracted with forceps. The head having passed the brim no difficulty was experienced during extraction. The placenta was adherent and had to be removed. The patient being in a very exsanguine condition, was infused with saline solution, but with temporary benefit only; she gradually sank and died in the evening of the same day.

CRANIOTOMY (was performed once).

CASE.—M. A. D., aged twenty-eight; admitted 20th December, 1892. An unsuccessful attempt had been made by a practitioner outside to deliver with forceps. Cervix lacerated, profuse hæmorrhage. The pelvis was deformed. The true conjugate was $2\frac{3}{4}$ inches; no fœtal heart. The head was perforated, crushed by cephalotribe and delivered with cranioclast. Cervix plugged with iodoform gauze. Patient went out on the eighth day.

SYMPHYSIOTOMY.

This operation was performed three times, and, though one patient died, we hold it to be a good method of delivery in suitable cases.

CASE I.—J. M., aged forty-three; 10-para; admitted November 19th, 1893. Her first eight labours ended naturally, the ninth was a very difficult forceps delivery, the child being extracted dead. Since then she had suffered from rheumatism, and latterly had been unable to walk. The pelvis was flat, C. V. 7 cm. After ninety-one hours of labour an unsuccessful attempt was made with forceps. The symphysis pubis was divided and the head expressed manually. The sudden separation of the pubic bones caused a laceration of the urethra, which the Master was able to cure by a subsequent

operation. Mother and child left the hospital well. Probably owing to the long rest in bed her rheumatism had so much improved that she could walk fairly well. There was good union of the bones.

CASE II.—E. M., aged twenty-two; admitted August 23rd, 1893; 5-para. Had been delivered on former occasions by craniotomy. Pelvis flat, C. V. 7.6 cm. Hand presented with head. After twenty-two hours labour cord prolapsed. An unsuccessful attempt having been made to apply the forceps, symphysiotomy was performed. The head immediately passed the brim and delivery was completed by forceps. The patient made an afebrile recovery, and left the hospital with her infant in good health.

CASE III.—E. M'G., aged twenty-six; 3-para. Flat pelvis, C. D. 8 cm. Her first pregnancy was terminated by perforation, the second by induction of premature labour, and she was advised to have the same on this occasion, but did not come into hospital until full term. After many hours' labour the cord prolapsed; the symphysis was divided, and the child turned and extracted. There was an extensive laceration of the cervix and urethra, with violent hæmorrhage. The laceration was closed with sutures, and eight pints of saline solution infused. Temperature rose on fourth day, the wound assumed an unhealthy, sloughy appearance, and she died on the twelfth day.

All the infants survived.

ECLAMPSIA.

There were nine cases during the year. The mortality was—in mothers, two; in infants, five. The urine in every case was found highly albuminous. In no case was the number of fits so high as in previous years, partly due no doubt to the different treatment adopted. Chloroform was administered as sparingly as possible, and, in our later cases, Veit's treatment—hypodermic injection of morphin—was adopted with satisfactory results; though the number of cases is as yet too small to warrant us in being at all dogmatic.

In one case a secundipara of twenty-five, who had three fits before and eight after admission; delivered of twins, males, alive. The treatment adopted was large enemata of saline fluid, and spartein by the mouth. She made a good recovery.

CEREBRO-SPINAL MENINGITIS.

CASE.—M. M'C. Temperature on admission $100\cdot2^{\circ}$, pulse 130. Intense pain in occiput; head drawn backwards. Hæmaturia. Aborted 28th of June. Evening of 30th, temperature 105° , pulse 160. Died at midnight. The case was seen by Dr. James Little, Consulting Physician to the Hospital, who confirmed the diagnosis.

DR. MACAN congratulated Dr. Smyly on result of the Report. There were very few cases of septicæmia, and most of them were brought from the outside. He was very glad to see that "auto-infection" had not been called in to lessen the deaths from septicæmia. The chief point of interest was, he thought, with regard to symphysiotomy. He considered that it was a very difficult operation, requiring three assistants, and that it also required very skilled after-treatment. He thought that the consensus of opinion at the meeting at Rome was that it was a very difficult operation, and that it was unsuited for ordinary practice. In some cases he had read of, the symphysis could not be found, in others when found it could not be opened. It would be very difficult to measure the pelvis with sufficient accuracy, so as to be sure that you were between 6·7 and 8·1 c.m. He would like to know from Dr. Smyly the exact indications for symphysiotomy. With regard to the question of convulsions he was still in favour of the old treatment by chloroform and chloral. He thought there was a great deal of difficulty in carrying out the morphia treatment, especially as many practitioners were averse to giving morphia to cases suffering from albuminuria. He considered accidental hæmorrhage one of the worst accidents in midwifery, but thought that as long as the membranes were intact there was no case in which plugging would not stop the hæmorrhage. He thought that the last-mentioned case of *post-partum* hæmorrhage could have been plugged with advantage.

DR. ATTHILL said that he thought some of the cases of "face to pubes" must have been overlooked, as very few were mentioned. He said that the question of plugging or not for accidental hæmorrhage was a very old one. It used to be laid down that it was absolutely wrong to plug in accidental hæmorrhage, but he had discovered that many cases of supposed placenta prævia which were plugged did very well, but turned out not to be cases of placenta prævia. He thought that if there were good "pains"

plugging was perfectly safe, but did not like it if there were no pains. He doubted if it were wise to douche (creoline douche 110° F.) in cases of accidental hæmorrhage. If hot water was applied rapidly it caused contraction, but if long continued it caused relaxation. He thought that perchloride of iron had saved several other cases in which nothing else would have. He agreed with Dr. Smyly in condemning the indiscriminate use of the forceps, and with Dr. Macan in dreading symphysiotomy. He had seen several cases in which the symphysis had separated without operation, and in which the woman was invalided for the rest of her life, and so he thought the cases operated on would not be such good recoveries as seemed at the time. He would prefer an operation of some kind of abdominal section instead. He preferred the chloroform and chloral treatment of convulsions. He also thought that taking 10 or 15 ounces of blood pretty rapidly from a vein was very good, but that it was not applicable in all cases. He had done it on several cases with benefit.

Dr. ALFRED SMITH entirely agreed with Dr. Smyly in thinking that morbidity is the real test of antiseptics employed. The removal of adherent placenta was considered one of the most dangerous operations in midwifery, but in the Report he found that 19 had been removed and that there was no record of death. In the treatment of cases of deformed pelvis, he thought that the proper course was to rely more on the powers of nature to mould the foetal head to the brim. He thought that symphysiotomy should not encroach upon forceps or turning. With regard to eclampsia, he said that since the cause was not clear there was no satisfactory method of treatment. Nearly all the methods were good, but were suitable in different classes—morphia in one class, chloroform in another.

Dr. GLENN compared the statistics of morbidity within the last 4 years, and showed how greatly it had fallen off—first year, 185; second year, 117; third year, 94; fourth year, 60. With regard to symphysiotomy he said that Winckel had given the following statistics in contracted pelves:—For children, mortality in forceps, 15 per cent.; in version, 51·3 per cent.; for mothers, in forceps, 4 per cent.; in version, 3 per cent. Leopold, in his last Report, states that the results of the induction of labour are unsatisfactory. Only 33 per cent. of the children are kept alive. If symphysiotomy was going to remain it must take the place, in some cases, of prophylactic version and high forceps. He remarked that it was

not the size but the hardness of the head which caused trouble. With regard to the difficulty of finding the joint at the symphysis, out of 60 pelves examined by Luschka, there were only 8 in which the joint was in the middle line, 40 were to the left of it, and therefore one should always look for it more to the left. He had found difficulty in preventing the bones springing apart too far when he had opened the joint. There was a gain in the sagittal direction of 1.2 c.m. due not only to the separation of the symphysis, but also to the descent of the pubic bones 2 c.m. He thought that the operation should be done in the left lateral position, as there would be greater power over the patient to prevent the bones springing too far apart. If possible it should then be left to nature. He thought symphysiotomy had a future before it.

DR. PARSONS said that the more he thought of the treatment of eclampsia by chloroform the less he liked it. That the convulsions can be stopped by it is perfectly certain, but he did not know whether it was a good thing to stop the convulsions. In experimenting on animals you must not give too much chloroform if you want to stimulate the cortex. So the convulsions are stopped by the chloroform reducing the excitability of the cortex. Therefore the convulsions are only stopped by introducing a more powerful poison than the one being contended with. The same remark applies to morphia. Chloroform is more dangerous than chloral, as it is a greater cardiac depressant. The treatment he would prefer most would be free purgation, because some toxic substance is present in the system which is not being excreted by the kidneys in sufficient quantity.

DR. CROLY thought that in convulsions nothing was so good as cold effusions to the head continued for a considerable time. They had the advantage of not depressing the patient.

DR. PÜREFOY looked rather unfavourably upon plugging in accidental hæmorrhage. He had seen no bad results follow the use of perchloride of iron. With regard to puerperal convulsions, Brown-Séquard had shown that the inhalation of chloroform may be continued for a much longer time if preceded by a hypodermic injection of morphia, so he would give one dose of morphia and continue the use of chloroform. He agreed with Dr. Atthill in thinking that bleeding was of use in some cases.

DR. SMYLY, replying, said that unfortunately a death had occurred from P.P.H. It was because he did not expect a bad result that it occurred. If he had supposed she was going to die he would

have plugged with iodoform gauze or injected perchloride of iron. The hæmorrhage occurred in consequence of a submucous myoma. There was no P.P.H. at the time, but only two or three hours after delivery. The uterus was left well contracted, but violent hæmorrhage came on again. He had not time to give his views on accidental hæmorrhage, but said they would be found in the coming number of the *British Medical Journal*. With regard to convulsions he thought that the tendency to death was due to failure of the heart and œdema of the lungs, both of which were increased by chloroform. Morphia gave better results. He now came to the chief point in the report, namely—the treatment of deformed pelvis. Symphysiotomy was only a very small part of the treatment. A great many men recognised pelvic deformity only by the failure of the child's head to enter the brim. They then had recourse to the forceps, with the most disastrous results. He considered pelvic deformity a contra-indication to the use of the forceps, and would not use them unless there was a strong indication for them. He would now give an epitome of the treatment of pelvic deformity. Suppose you meet with a case of pelvic deformity in pregnancy, the first thing to decide is whether you will induce premature labour. In suitable cases he would prefer induction to symphysiotomy. If the latter improved he might adopt it for the sake of the child, but in the present state he would not. When given a woman in the commencement of labour, he would divide them into those cases in which he could not possibly get a living child per vias naturales, and those in which he might. In the first case, under 6 c.m. is an absolute indication for Cæsarean section. Between 6 and 7 c.m. you have the choice between Cæsarean section, symphysiotomy, and perforation. At present he would prefer Cæsarean section. Taking now those cases above the point in which one might hope for a living child. He preferred the expectant method to prophylactic version, because the latter must be done at the commencement of labour. If you perform prophylactic version, you put symphysiotomy out of the field because the child would be dead if it failed to come through. Symphysiotomy is the end of the rôle that begins by waiting. If the head does not mould you must then try the forceps, or failing them, you have the choice between symphysiotomy and perforation. He shrank from perforation on moral grounds. It would be too late to perform version. He admitted Dr. Macan's objection to symphysiotomy. The number of assistants required prevented its being used in general practice.

HYDROCEPHALUS ASSOCIATED WITH SPINA BIFIDA.

By W. J. THOMPSON, B.A., M.D. UNIV. DUB.;

L.R.C.S., L.R.C.P.;

Demonstrator of Anatomy, Royal College of Surgeons.

[Read in the Section of Obstetrics, December 21, 1894.]

THE patient whom I have the privilege of exhibiting to you is now three months old. When born, the spina bifida was as large as an orange, flaccid, translucent, and covered over with a thin bluish membrane, which united at the side with healthy skin. There was complete paralysis of the lower extremities, but not of the rectum or bladder. The laminae of the vertebræ were wanting, and the bony ring around could then, as now, be distinctly felt. The legs, as well as being paralysed, were everted from the hip joint, so much so that their posterior aspect from the knee-joint to the heel lay in perfect apposition, and the left foot presented a well-marked specimen of talipes calcaneus. The case is either a meningo-myelocoele or syringo-myelocoele, probably the former. For about one month after birth there was no change in the child's condition; after that period the tumour commenced to get smaller, more tense, and the skin healthier; the legs also regained power, and the eversion became less marked. About two weeks after this improvement, the hydrocephalus commenced and has steadily and gradually increased; the circumference of the head measuring, at present, 20 inches. The cranial bones are widely separated, the fontanelles greatly enlarged, and the sutures very distinct. There is distinct fluctuation and the veins on the outside

are enormously distended. The face presents the usual characteristic triangular appearance. In this case whether the fluid is situated in the ventricles or subarachnoid space could only be definitely decided by a *post mortem* examination, but from the easy way fluctuation can be felt it seems probably subarachnoidal.

This is rather an unusual specimen, for, from the statistics of the Clinical Society of London, which appointed a committee some years ago to report on such cases, it would appear that spina bifida occurs about once in one thousand births, and it is associated with hydrocephalus about once in ten thousand births.

I should mention that the family history of the child is good. The father and mother are both strong and healthy. This is their third child. The first, born in July, 1892, was taken to the Meath Hospital when two days old, and seen by Sir William Stokes. He has kindly allowed me to show these two photographs of it (exhibited) from which an enormous tumour is seen on the left side of forehead. He states that "the tumour was an enormous nævus—the largest he had ever seen." The second child, now one year and a-half old, is perfectly healthy.

The treatment of the spina bifida up to the present consisted of firm pressure with simple antiseptic dressing. This course is often recommended for two or three months before any operative interference is undertaken, and it sometimes succeeds.

The points of interest in the case are:—

1st.—The situation of the spina bifida in dorso-lumbar region.

2nd.—Paralysis only of lower extremities, with eversion.

3rd.—Co-incident development of the hydrocephalus.

4th.—The enormous nævus on a former child of the same family.

DR. ALFRED SMITH said that he had seen the child when it was only a month old, and that he thought that it could only live a week or two.

MR. CROLY remarked that the child had a very rare form of talipes—namely, talipes calcaneus, which he said was often associated with spina bifida.

DR. MACAN thought it a very interesting case of spina bifida going through almost a natural cure, and questioned whether the tension had been taken off the sac by the giving way of the cranium. It would be interesting to see if anything could be done to remove the hydrocephalus by tapping, pressure, or in any other way.

DR. PUREFOY noticed that some moisture was coming through the skin over the spina bifida.

DR. THOMPSON said that this was the only day in which that had occurred.

DYSMENORRHEA, COMPLICATED BY THE PRESENCE OF A PEDUNCULATED FIBROID SIMULATING AN OVARIAN TUMOUR.

By LOMBE ATTHILL, M.D., F.R.C.P.;

Ex-Master Rotunda Hospital;

Consulting Physician to the Adelaide Hospital.

[Read in the Section of Obstetrics, January 25, 1895.]

In September, 1894, a lady, aged about thirty years, unmarried, came under my care. She had lived a sedentary life, but had enjoyed good health till about her twenty-fourth year, when, I believe, as the result of a chill, she began to suffer pain at the menstrual periods; previously they had been painless. From this date the pain gradually became more severe, and about a year and a half prior to her consulting me the cervix had been divided for its relief, and for a little time she suffered less, but the relief was only temporary. She soon relapsed into her former state, and for the last six months had been worse than ever.

She stated that she was now never free from pain in both ovarian regions, that in the left being the worst. A week before the advent of the "change," and during its continuance, her sufferings were so acute that she was unable to leave her bed. The appearance of the flow brought little relief, though after the third day she usually became somewhat easier, but was not able to be up for some time after its cessation; in fact, life was a burden to her.

On examining her I found the cervix uteri quite patulous, and there was no symptom of uterine disease. This fact and the history of the case, in my opinion, conclusively pointed to the ovaries as being the cause of her sufferings.

On passing the hand over the abdomen, a firm elastic tumour could be distinctly felt. It lay above and a little to the left of the pubes, and evidently was adherent to the abdominal wall. A bimanual examination proved that it was separated from the uterus by some distance; handling it caused a little pain.

I felt much doubt as to the nature of the tumour. Its situation militated against the idea of its being ovarian. On the other hand, it was separated from the uterus by quite a considerable distance, felt elastic to the touch, and was somewhat painful, and I came to the conclusion that most probably the tumour was the ovary which had become enlarged, as the result of repeated inflammatory attacks, and had, as a consequence of local peritonitis, become attached to the abdominal wall anteriorly.

On weighing all the facts, I came to the conclusion that the tumour should be removed without delay, and that if the other ovary proved to be unhealthy, as I suspected it would, that it should also be removed. I explained the nature and results of the operation fully to the patient, and she willingly consented to undergo it. There was no difficulty in exposing the tumour, which proved, as anticipated, firmly adherent to the abdominal wall. There were no adhesions to the intestines. Some trouble was experienced in breaking down the adhesions, but when this was accomplished I was mystified as to what the tumour was. At first I could find no pedicle, but a careful investigation detected a very slender one, not the thickness of a cedar pencil. This led down to the uterus, and I now discovered that the tumour was a pedunculated uterine fibroid which had become adherent to the abdominal wall anteriorly—a very unusual position indeed in which to find a tumour of this nature.

I ligatured the pedicle, and having removed the tumour, searched for the ovaries, both of which proved to be diseased. The left one contained a tolerably large cyst, which ruptured during removal. The right one was also considerably enlarged, and contained a small cyst. Both were removed.

The patient made a rapid and perfect recovery. A sanguineous discharge came on on the fourth day after the operation, and lasted for two days. Since then there has been no recurrence of menstruation. She remains at the present date—that is three months after the operation was performed—quite free from pain, but suffers some discomfort from flushings—such as are commonly noticed at the climacteric period. In all other respects she enjoys excellent health, and is able to discharge with comfort the ordinary duties of life.

The case is interesting—first, in showing how useless the operation of division of the cervix uteri is, unless the

case be a suitable one, which this one was not; second, in the satisfactory results which followed the removal of the diseased ovaries. I have long held the opinion that this operation has been much more frequently performed than was needful, or could be justified by the condition of the patients operated on; but that it is not alone justifiable, but, indeed, imperatively called for in certain cases, is abundantly proved. Of course, as was done in this case, it should be clearly explained to the patient, not alone the nature of the operation but also its effects. I have met with patients on whom I urged the necessity of the operation, but who would not submit to it for ethical reasons, and their feelings should be respected.

Lastly, the error of diagnosis into which I was led, though I guarded myself on this point as already stated, shows the difficulty which, in this respect, besets cases in which abdominal tumours exist. I did not expect to meet with a pedunculated fibroid in the position which this one occupied.

DR. MACAN did not think that the process of diagnosing ovarian dysmenorrhœa by the exclusion of uterine trouble should always be followed. Very little was known about dysmenorrhœa, and there were often cases in which the physical examination showed nothing. As the tumour was very painful on examination he thought that the case was probably not one of ovarian dysmenorrhœa but that the tumour caused the pain.

DR. SMYLY thought that the pathological condition causing the dysmenorrhœa should always be looked for and treated; just as when treating a cough, the cause and not the symptom should be treated. Nothing was more difficult than to diagnose the conditions of the ovary which produce dysmenorrhœa. He had operated on only one case, that of cirrhosis of the ovaries. They were examined by Dr. M'Weeney. One was found completely destroyed, the other nearly so. He questioned whether in this case, the tumour having been removed, it would not have been

better to leave the ovaries. If they were removed to prevent the further growth of myomata in the uterus he thought it justifiable.

DR. A. SMITH believed that an ovary could cause dysmenorrhœa. He had shown one to the Academy which was a good example of a retention cyst. He had removed this ovary, leaving the other behind. Nothing else was done, and the pain ceased. He agreed with Dr. Macan in thinking that the fibroid tumour was, in Dr. Atthill's case, the cause of the pain, especially as there was evidence of inflammatory trouble when the abdomen was opened. He would have been inclined not to have removed the ovaries.

DR. HORNE said he had assisted at the operation. It was not the size of the tumour but the intense pain the patient suffered from which led to the operation. Some years before the woman, on account of the violent pain, went to a doctor, who divided the cervix. After that there was inflammatory trouble which caused matting of the parts in the pelvis. The tumour lay to the left side, but they did not know whether it was an enlarged ovary, a greatly enlarged tube, or a fibroid. When the abdomen was opened it was found necessary to remove the tumour before proceeding further. The ovaries were then found in a cystic condition and were removed. Fibroid tumours seldom give rise to pain unless they press on neighbouring organs.

DR. MORE MADDEN expressed his entire concurrence with the treatment carried out by Dr. Atthill. He had very frequently seen great dysmenorrhœa caused by very slight abnormal conditions of the ovaries, but had not seen such dysmenorrhœa produced by small tumours of the uterus unless they interfered, by their position, with the function of the ovaries or Fallopian tubes. He thought it was evidently a case of ovarian dysmenorrhœa. He thought it was often impossible to discover the cause of the dysmenorrhœa.

DR. PUREFOY thought that cases of dysmenorrhœa were difficult to treat, especially those called ovarian dysmenorrhœa. In his opinion the pain is not always in exact proportion to the pathological condition of the ovaries. Many have ovaries showing considerable pathological change in cases in which the patient has not complained of much pain. In this case he understood Dr. Atthill mentioned two kinds of pain—dysmenorrhœa some years ago which had increased, and also latterly a constant pain, which, in his opinion, was due to the tumour.

DR. ATTHILL, replying, said he would not have thought of

removing the ovaries unless he believed that they were radically diseased. He had removed the ovaries only six times. The patient had never referred her pain or any of her sufferings to the tumour. One of the ovaries had a cyst in it the size of a walnut, the other had a smaller cyst in it. He thought their removal perfectly justifiable. He would not have removed them if they had not been diseased. The uterus was enlarged, but had no nodule in it.

CÆLIOTOMY.

By ALFRED J. SMITH, M.B.;

Examiner in Midwifery, Royal University;

Professor of Midwifery, C.U.I.

[Read in the Section of Obstetrics, March 1, 1894.]

THE patient was unmarried, aged twenty-five. She enjoyed good health up to two years ago, when her menstruation became painful. She missed a menstrual period in November, 1894. About the end of December, 1894, the change came on very heavy, and was accompanied by great abdominal pain. She then consulted Dr. O'Gorman, of Arklow, who diagnosticated an ovarian tumour, and sent her into the gynæcological wards of St. Vincent's Hospital. On examination the breasts were enlarged—marbled; the areola very dark—with well-marked secondary areola—which was raised above the body of the gland like a watch-glass. On pressing the nipple, milk squirted out profusely. Linea nigra well-marked, also lineæ albicantes, particularly on the left side. Examination under ether showed one large ovarian tumour, with long pedicle growing from the left side. On the right, the ovary could be palpated, and along with the ovary a cyst apparently continuous with the Fallopian tube. The impression conveyed was that of an extra-uterine foetation in the distal end of the tube.

This opinion was apparently corroborated by the history and other signs of pregnancy. The abdomen was opened next day, and the tumours were removed. The cyst in the right side proved to be a papillary cyst rising from the hilum of the ovary; it was the size of a hen's egg—and not an extra-uterine foetation. Recovery rapid.

DR. SMYLY thought it was very like a tubal pregnancy. In any case Dr. Smith did the right thing in operating at once. He saw a case in Berlin of a tubal pregnancy in which they put off operating till the next morning. During the night the tube ruptured.

DR. F. W. KIDD said it was interesting to note what a number of pelvic tumours have the symptoms of pregnancy occurring simultaneously. He had seen a case which turned out to be an intra-ligamentous cyst which developed all the symptoms of pregnancy of the fourth month, and a great many of the signs.

DR. WINIFRED DICKSON saw a case operated on in Berlin. She presented the symptoms of ruptured tubal foetation, and a tumour could be made out on one side. When the abdomen was opened, the tumour was found to be an ovarian cyst, but on the opposite side was a small ruptured extra uterine foetation which had given rise to the symptoms.

DR. GLENN proposed that the tumour be referred to the Committee of Reference for pathological investigation. This proposition was seconded by DR. SMITH, and passed.

DR. M'WEENEY's report on Dr. A. J. Smith's specimen:—

The specimen consists of two cystic structures, evidently ovaries (right and left). The larger would, if distended, about equal the size of the foetal head at full term. Adherent to it is a piece of normal-looking oviduct 11·2 cm. long, terminating at one end in the fimbriated extremity, whilst the other end is a cut surface corresponding to part of the pedicle. The outer and inner wall of this cyst are tough, fibrous, and smooth, without papillary or other excrescences. The cyst contains a smaller one. That part of the wall of the larger cyst that corresponds to the ovary is common to both; for the rest of its extent the smaller cyst has walls of its own. It has no excrescences. The outer ovary has also a piece of oviduct 5 cm. long, adherent to it. The bond of union consists of a rather wide strip (3 cm.) of broad ligament. The piece of oviduct in question is thicker than its fellow, and possesses better developed fimbriæ. About 1·5 cm. from the divided end, there is a flat, wart-like, slightly elevated outgrowth, as large as a threepenny piece. On section this appears hollow, and fitted with loose friable material arranged in thin folded plates. To the naked eye this looks like a localised bulging of the lumen of the tube, with thickening of the mucous membrane. On microscopic examination this proved to be the case. The

tumour adherent to this Fallopian tube is as big as a large hen's egg, and consists of a solid and a cystic portion. The latter has the broad ligament inserted into its outside wall, which is smooth, semi-transparent from tenuity, and yellowish. On being opened, this cyst is found to contain a mass of white brittle material, which is evidently paralbumen, coagulated by alcohol. The solid part, which is by far the smaller, contains a cavity, filled with blood clot. This cavity is roughly circular and 16 mm. in diameter. Near it are several smaller cysts averaging the size of a pea, and containing coagulated albuminous material. These are all embedded in a tough, fibrous, stroma. Finally, almost at the line of insertion of the broad ligament into the large cyst, there is a narrow strip shut off from the latter by a septum, and sub-divided into several loculi by secondary septa. These loculi have smooth walls, and contain coagulated albuminous material. Microscopically, several of these smaller cysts are lined with cubical epithelium, whilst others, if they ever possessed such a lining, have lost it. One is lined with several layers of nucleated cells, the margins of which are indistinct and their nature doubtful. They resemble the so-called *discus proliferus* of the Graefian follicle. The only other point of interest is the supervention of colloid degeneration, which affects areas of the fibrous structure, intervening between the cysts, over considerable areas, and gives the typical reactions of this substance. To sum up, the conditions are not unfrequently encountered, but their occurrence in both ovaries of the same patient is a matter of some interest.

LEUCORRHŒA: ITS CAUSES, VARIETIES, AND TREATMENT.

By THOMAS MORE MADDEN, M.D., F.R.C.S. Ed.;

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[Read in the Section of Obstetrics, March 1, 1895.]

THE subject of the present communication, trite as it may seem, is well deserving of fuller consideration than is generally accorded to it by modern gynæcological authorities. In a large proportion of instances the first symptom that directs the attention of patients to the most common forms of diseases peculiar to women is leucorrhœa, or, in other words, some abnormal mucoid exudation from the genital canal. Such discharges, although obviously symptomatic, are frequently so prominent a feature of these cases, or are so obscure in their causation, so far-reaching in their consequences, or so intractable in their management, as to occasion no small part of the diagnostic and therapeutic difficulties encountered in this special branch of practice.

It may, therefore, be not altogether useless to review briefly, from the stand-point of a somewhat extended clinical experience, our knowledge of the general pathology of leucorrhœa, the circumstances from which this originates, the results it occasionally produces, and the methods available for its treatment.

Under the term leucorrhœa I shall here include all those mucoid exudations containing elements foreign to healthy mucus that may proceed from the lining membrane of any portion of the female genital tract. These discharges are

commonly classified in accordance either with their special cause, or from their primary location. The latter arrangement, although open to the objection that this complaint seldom remains permanently confined to its starting point, and also that its characteristics, consequences, and treatment are influenced, not alone by its situation, but, moreover, by the special exciting cause of the discharge, and by the constitutional condition of the patient in each instance, is nevertheless probably as good as any other that can be suggested, and hence will be followed in the subsequent observations, in the course of which the vulvar, vaginal, uterine, and tubal forms of leucorrhœa must be separately discussed.

Before so doing, however, I may premise that mere blenorrhœa, or simple hypersecretion of the mucus—containing no morphological elements besides detached epithelial cells and mucous corpuscles—normally secreted by the genital lining membrane, does not come within the purview of my remarks on leucorrhœa, although it is so included by other writers. Irrespectively of any pathological conditions, that natural secretion of mucus may physiologically be increased by local hyperæmia consequent on ovulation or pregnancy. Moreover, its normal amount bears a constant relation to other circumstances, being greatest during the epochs of reproductive activity and in married life; and, on the other hand, being smallest in quantity before the period of puberty, and again in advanced age when the vaginal rugæ become comparatively bloodless or obliterated, and when, also, the uterus and its adnexa generally undergo a more or less marked process of senile atrophy.

I. VULVAR LEUCORRHŒA.

In reference to leucorrhœal discharges from the labia, nymphæ, and adjoining parts within the vulvar area or in immediate vicinity, it may be observed that not only

are these mucous surfaces peculiarly exposed to the external or catarrhal, infective, and traumatic causes of local inflammation resulting in exudations, but also in the contiguous glandular structures present a fertile field for their development and extension. For instance, the vulvo-vaginal or Bartholinian glands in the deep fascia on either side of the vaginal orifice, are, together with their afferent ducts opening at the side of the nymphæ, liable to inflammation, often resulting in abscess or in cystic disease, one of the first symptoms of which is an excessive and vitiated mucoid exudation.

The most common causes of vulvar leucorrhœa are, with one exception, especially exemplified in pediatric practice. Thus, in the Children's Hospital, Dublin, with which I have been connected for the past twenty-three years, I have had occasion, as I pointed out in some lectures published in 1886, and again in my recent "Handbook of Diseases of Women," to notice the great frequency and importance of leucorrhœa in children of all ages from infancy up to puberty. Moreover, such discharges may possibly become of medico-legal as well as therapeutic interest, as I have seen in several instances where I have been called on to give medical evidence in reference to charges arising from this occurrence.

As, however, the practical importance of vulvar leucorrhœa in childhood does not appear to be sufficiently recognised, I would commend the following remarks of Dr. Keating, of Philadelphia, to the careful consideration of those who have to deal with such cases:—"The catarrhs of infancy, which may result from cold, pent up secretions, want of cleanliness, &c., act on the mucous lining of the uterus, as they do on that of the nasal passage, producing congestion, infiltration, and finally stenosis of the passages. The effect this has upon the uterus is to congest it, to obstruct its canal, and to increase its weight, and undoubtedly not a few of the

uterine flexions and versions, with their many symptoms, including dysmenorrhœa, that attend puberty or follow it, owe their origin to this cause. . . . Every mother should be taught that no child should have protracted leucorrhœa—that it is a pathological condition, and needs the immediate attention of the physician.”^a

Nor are the effects of neglected vulvar leucorrhœa limited to those above-mentioned, for, as another American authority, Dr. Currier, has pointed out, although either vulvitis or vaginitis may exist alone, more frequently the infectious disease which begins with the vulva does not end there, but may extend to the uterus, the Fallopian tubes, the ovaries, and the peritoneum, and therefore, as he adds, it seems extremely probable that many of the deformed and undeveloped uteri, with which are associated so much dysmenorrhœa and anguish, sterility and domestic unhappiness, are the legitimate consequences of vulvo-vaginitis in early life.

Ætiology.—Of all the causes of vulvar leucorrhœa one of the most important in childhood is a constitutional strumous taint, the local influence of which is often as obvious in this complaint as in the chronic glandular affections of children of that diathesis. Next in frequency in the causation of such discharges at all ages, but more especially in the ill-cared children of the poor who have come before me in the extern departments of the hospitals to which I have been attached, is the too common neglect of that attention to the cleanliness of the genitalia which is essential to their sanitary integrity. In other instances, vulvar leucorrhœa is consequent on local irritation traceable to ascarides. Still more frequently, in young and old alike, it presents a catarrhal form following exposure to cold or wet, or it may result from direct injury to the parts as well as from any other cause of vulvar

^a Leucorrhœa. *Cyclopædia of Diseases of Children.* Edited by John M. Keating, M.D. Vol. III., p. 716. Philadelphia, 1890.

inflammation, whether non-infective or specific—*i.e.*, gonorrhœal or syphilitic.

Symptoms.—Reserving the last-mentioned, or specific forms of leucorrhœa for subsequent consideration, the ordinary symptoms of pudendal inflammation, leading to mucoid discharges from the vulva, are briefly—a sense of fulness, or discomfort in the external genitalia, together with a hyperæmic tumefaction of the vulvar mucous membrane, followed by the exudation of a discharge, which from the first is generally much more viscid and tenacious than in the vaginal forms of the complaint. In many instances the pudendal orifice is so glued together by this discharge as to cause considerable pain and difficulty in micturition.

Treatment.—A primary point to be attended to throughout the treatment of vulvar leucorrhœa is to secure, as far as possible, the asepsis of the affected surface by the frequent use of warm antiseptic lotions—such as boric acid, 1 in 25; izal, 1 in 100; lysol, 1 in 100, or corrosive sublimate, 1 in 2,000—so as to sterilise and to cleanse the parts as thoroughly as practicable from the abnormal exudations, which, when allowed to accumulate there, are liable to become decomposed, and thus not only increase the local irritation, but also furnish a medium for the reception and development of pathogenic micro-organisms, by which the entire genital tract may be speedily infected.

Without entering in detail on so wide a question as the causes, immediate or predisposing, of the hyperæmic and other conditions of the vulva that may give rise to leucorrhœal discharges therefrom, and the recognition and treatment of which is essential to their cure, it will, perhaps, suffice to say that, in cases of ordinary catarrhal and simple inflammatory mucoid discharges from the lower segment of the genital tract, these exudations may, generally speaking, be arrested either by the application to the vulvar mucous surface, by

the insufflator, of non-irritating, dry, antiseptic, astringent agents (such as loretin and salol), or by the topical employment of boro-glycerine, and glycerine of carbolic acid ; or, and oftentimes no less effectually, by some of the older-fashioned ordinary local astringents, such as a strong (*i.e.*, 3ii. to the 3i.) solution of nitrate of silver. In the interval between these applications the parts should be kept well separated by creolin gauze (10 per cent.), saturated with dilute liquor plumbi, or hazeline, until the discharge has completely subsided. During this local treatment the patient, if we wish to effect a speedy and permanent cure of acute vulvar leucorrhœa, should be restricted to bed, and, after free purgation, be put on a light, nutritious dietary. Even in the chronic forms of this complaint these measures are frequently no less advisable, in conjunction with the addition of any tonic or other remedy that may be specially indicated by the existence of the strumous, chlorotic, anæmic, or other constitutional cachexiæ, one or other of which is so generally associated with chronic vulvar leucorrhœal discharges, and by which, in not a few instances, it may be produced or kept up.

II. VAGINAL LEUCORRHŒA.

Whilst as already observed leucorrhœa, if neglected, sooner or later travels far beyond its primary seat, nevertheless, in many instances this process of invasion is indefinitely protracted, and for a time at least the complaint remains localised, and evinces distinctive features consequent on the structural and physiological characteristics of its starting-point. Thus, for instance, leucorrhœal discharges from the mucous membrane of the lower portions of the vagina are generally less viscid than those proceeding either from the vulva or from the upper part of that canal, or still more, those from the cervix. From the latter vaginal mucoid

exudations further differ, not only in their acid reaction, but also in that peculiar opalescent yellowish-white, creamy colour to which the disease owes its popular name—"the whites." This distinctive appearance is obviously due as much to the larger proportion of albuminous constituents, both in solution and in suspended flocculi of coagulated albumin, which such vaginal secretions contain, as to the presence therein (as was originally demonstrated by the late Dr. Tyler Smith, to whose exhaustive and too seldom acknowledged researches on this subject subsequent writers owe much) of innumerable scaly epithelial cells, and fatty *débris* with which, as the disease progresses, genuine pus corpuscles and blood discs may eventually be interspersed.

On the other hand, those yet more opaque, semi-solid, curdy exudations, frequently observable in the upper portion of the vagina, generally result from the admixture there of its acid secretions with the alkaline cervical discharges, and the consequent firm coagulation and ultimate local adhesion of their albuminous constituents. In this way the vaginal walls may become so densely encrusted by pseudo-membranous-looking exudations as to produce those appearances which some authorities have, as I think erroneously, ascribed to croupous, or diphtheritic vaginal disease.

Ætiology of Vaginal Leucorrhœa.—The causes of this condition include all the forms of local irritation to which the genital canal is liable, such as the following:—(1) catarrhal and (2) strumous inflammation of the vagina, (3) follicular vaginitis, (4) specific, and more especially gonorrhœal, infection, (5) neglect of cleanliness, (6) irritation from worms, (7) vaginal tumours, (8) congestion resulting from uterine displacements, (9) mechanical injuries, (10) over-stimulation of the parts, as frequently evinced in newly-married patients. Vaginal leucorrhœa may also arise—(11) from the extension of uterine, tubal, ovarian, or pelvic disease; or (12) from

the genital hyperæmia attending the latter months of pregnancy; or (13) from the topical congestion ushering in the catamenial epochs, or consequent on the menopause. Moreover, independently of any local lesion leucorrhœal discharges may—(14) be vicarious of menstruation; or (15) be consequent on arrested lactation; or (16) be due to metastasis of remote disorders; and lastly (17), they may be the result of constitutional debility, however occasioned, giving rise to impaired tonicity of the vaginal mucous surface, and consequent hypersecretion therefrom.

III. VAGINAL LEUCORRHŒA FROM INFLAMMATORY LESIONS.

Although the causes of leucorrhœa are so many-sided, as is indicated in the foregoing list—which might be extended—it will suffice here to refer chiefly to the more important of the inflammatory, or sub-inflammatory conditions that commonly give rise to that discharge. Amongst these are—1st, catarrhal and simple local inflammation; 2nd, infective or gonorrhœal; 3rd, strumous; and 4th, follicular vulvitis. In not a few instances, however, it will be found practically impossible to distinguish between the former—all of which, if unchecked, may eventuate in the last-named or follicular type of the disease.

Symptoms.—Vaginal leucorrhœa, from any of these inflammatory lesions, is generally preceded by a sense of heat and irritation in the affected mucous surface, which at the same time is tumefied and dry, until this hyperæmia becomes relieved by more or less profuse leucorrhœal exudations from the inflamed membrane. On local examination the calibre of the canal will now be found diminished, owing to the congestive tumefaction of its walls, and the vaginal mucous membrane highly vascular in aspect, when freed from the tenacious and possibly muco-purulent discharge by which it is coated, and by which are overlaid the mucous follicles

(ultimately eroded, hypertrophied, and dotted over with clusters of proliferating mucous papillæ). This condition, which may endure for an indefinitely protracted period, is very generally present in cases of long-standing vaginal leucorrhœa, and is then commonly connected, whether as cause or effect, with some form or other of chronic uterine, peri-uterine, tubal, or ovarian complaint.

Diagnosis.—The differentiation of gonorrhœal from non-specific inflammatory exudations from the vaginal mucous membrane, is a matter of great importance, and often of much difficulty. In both instances the extending local inflammation may give rise to discharges from the mucosa of the urethra and bladder as well as from the vulvo-vaginal surface, which can be distinguished only by the recognition of the gonococci of Neisser in the former class of cases. Frequently, however, this test is not practically available; nor is it always reliable, as that gonococcus is not invariably discoverable with certainty, at least by immediate microscopic examination, in gonorrhœal discharges, whilst, as Parrish and Baldy have pointed out, occasionally other micro-organisms, apparently morphologically identical with gonococci, are found which can be distinguished only by an expert. Moreover, as they add, “the disciples of Neisser have by no means satisfactorily proven that the gonococcus is the cause of gonorrhœa.” Under these circumstances, as a rule, our diagnosis must be grounded on the probabilities and history rather than on the immediate pathological evidences, or on the symptoms of the complaint. It should hardly be necessary, therefore, in this connection, to observe that in cases such as these, in which a patient's reputation or domestic happiness may be involved in the question now referred to, our opinions cannot be too carefully considered or too cautiously expressed.

Complications.—Vaginal leucorrhœa, whatever its origin,

as before said, invariably tends to extension to the contiguous mucosa, and hence urethritis, vulvitis, and cervicitis—often resulting in dysmenorrhœa and sterility—are daily observed in cases of this kind. Moreover, the specifically infective forms of vaginal exudation, if neglected, frequently lead either to endo-uterine disease or to graver tubal complications, such as salpingitis and pyosalpinx; or may eventuate in pelvic cellulitis and other inflammatory lesions of the pelvic connective and serous tissues.

Treatment.—In whichever of the above described forms leucorrhœal discharges from the vaginal walls present themselves, the principles on which they should be treated are essentially similar, and in none of them can the *nimia diligentia medici* be safely acted on. In most instances the obvious therapeutic indication is the abatement of that local hyperæmia on which the exudation is consequent, and this can be accomplished only by the removal of its immediate exciting cause, and by the cleansing away as far as possible and, if necessary, the sterilisation of the discharge. With these objects, should the origin of the complaint be gonorrhœal or other specific infection, effective germicidal agents such as 1 in 2,000 solution of bichloride of mercury, or creolin (1 in 200) should be freely applied locally; whilst in the majority of other cases of vaginal leucorrhœa of catarrhal and inflammatory causation, all that need be locally employed in the initial stage of the complaint is the frequent and abundant use of hot water followed by weak lead lotion, dilute solution of fluid extract of *hydrastis canadensis*, or any other soothing vaginal irrigation.

As soon, however, as the acute inflammatory condition of the vaginal mucous membrane commonly connected with the commencement of leucorrhœa has subsided, or where it does not exist, and when the exudation has become well established, the local employment of ichthyol in the form of a 10 per cent.

ointment may prove remarkably effectual, as I found in several instances, in arresting vaginal discharges, and removing the chronic inflammatory conditions with which they may be connected. This remedy is, however, so malodorous and messy in its use, as to prevent its general adoption. The ordinary necessary local astringent and antiseptic applications, such as boric acid and salol, may more commonly, therefore, be best employed in the way of the so-called "dry treatment" with the aid of the vaginal insufflator, by which I generally direct a powder consisting of equal parts of boric acid and alum, or iron-alum, to be introduced into the vagina daily until the discharge becomes checked. More recently, I have similarly employed, though in smaller quantities, vaginal insufflations of loletin—a comparatively new dusting application which Messrs. Burroughs and Wellcome brought under my notice last year, and which I have since then tested in several cases in my hospital. So far as I have been thus enabled to form an opinion, this agent, which apparently possesses many of the surgical uses of iodoform, whilst devoid of its offensive odour and toxic properties, would seem especially serviceable in the local treatment of muco-purulent and fœtid leucorrhœal vaginal discharges. Before the employment of any of these insufflations, the vagina should on each occasion be well flushed out with a carbolised or other antiseptic injection (temp. 110°).

In a few otherwise intractable cases of chronic vaginal leucorrhœa, I have experienced special benefit from the local use of a mixture of one part of glycerine of carbolic acid with four of glycerine of tannin, applied by means of a saturated tampon introduced through the speculum, on the removal of which the tampon should be retained for some time so as to bring the contracting vaginal walls in contact with the expressed astringent. In one instance my assistant, by accident, saturated the cotton wool with pure carbolic

acid, nor was this discovered until the vaginal surface was observed to become whitened and shrivelled up. The vaginal surface was then washed out with an alkaline injection, and the patient remained unconscious of the mistake that had occurred. Some days subsequently a complete cast of the vaginal mucous membrane was thrown off, the result being a permanent cure of the pre-existing vaginitis, and consequent leucorrhœa. This method of treatment, I need hardly say, however, is not here mentioned as one to be generally adopted in such instances, in few, if any, of which will any other local remedies than those above recommended be found necessary.

IV. VAGINAL LEUCORRHŒA OF PREGNANCY.

The physiological hyperæmia of the genital tract consequent on utero-gestation, commonly gives rise to hypersecretion of vaginal mucus. This being a symptom rather than a disease of pregnancy, generally calls for nothing more than proper attention to local cleanliness by the free use of warm water and coal tar or carbolic soap, or possibly the occasional employment of vaginal insufflations with boric acid. In some instances, however, the exudation is of thicker consistence, creamy, or yellowish in colour, and distinctly muco-purulent, giving rise to intense pruritus of the pudendum, especially in the latter months of pregnancy. This discharge may be confounded with that resulting from gonorrhœal infection from which it must be differentiated as before described. Moreover, as Dr. Leishman observed, when due simply to pregnancy, even the most profuse discharges rapidly disappear after delivery, and seldom attract any notice after the lochia have ceased to flow. Cases, however, occasionally occur in which such a discharge, originally appearing during pregnancy, lasts during the convalescence after labour, and ends in an obstinate and troublesome vaginal leucorrhœa. The

treatment of this affection must necessarily be confined within certain limits, so that sometimes palliation is the most we can hope for. Cauterants, or strong injections, cannot be employed, lest they should induce premature labour, and even the simplest injections must, if used, be employed with the greatest possible caution, as it is well known that repeated injections, even of tepid water, will often suffice to induce uterine contractions.^a

In cases of this kind I have myself almost always found constitutional treatment, and more especially the exhibition of iron and quinine or other tonics, no less necessary and serviceable than that mere attention to vulvo-vaginal cleanliness, which, together with astringent lotions and suppositories, is more commonly relied on.

Leucorrhœal discharges in the last months of pregnancy are especially prone to occasion great irritation or even erosion of the external genitalia, and for the relief of such cases of pruritus, in addition to the ordinarily employed local sedatives, I would again strongly recommend a fair trial of the methylene blue solution, which I recently suggested^b as one of the best of all topical analgesics in pruritic affections of the pudendum generally.

V. VAGINAL LEUCORRHŒA OF CONSTITUTIONAL CAUSATION.

Apart from any of the before-mentioned direct local sources of local irritation or hyperæmia, the secretions of the vaginal and uterine mucous surfaces may be abnormally augmented and altered by various constitutional causes, as is observed in patients of well-marked strumous diathesis, in whom abundant glairy exudations from the genital mucosa are hardly less common than the similar looking catarrhal discharges from the naso-pharyngeal surfaces and glands

^a *Vide* Leishman. System of Midwifery. Vol. I., p. 269.

^b *Vide* British Medical Journal, January 19th, 1895.

of scrofulous subjects. In like manner the importance of a constitutional factor in leucorrhœal cases is also apparent in females suffering from chlorosis, anæmia and other forms of debility, and in whom blenorrhagic vaginal hypersecretions that cannot be traced to any local lesion, and evidently consequent on general impairment of vascular tonicity, are so often noticed. In other instances, again, the constitutional cause of leucorrhœa is proven by its occurrence as a direct consequence of arrested lactation, or as a metastasis of gouty or rheumatic disorders. Still more obvious in this connection is the so-called amenorrhœal form of leucorrhœa, in which we find the suppression of menstruation attended by more or less profuse non-hæmorrhagic discharges from the vagina and endo-metrium.

VI. CERVICAL LEUCORRHŒA.

Of the many factors concerned in the ætiology of leucorrhœa, none is of greater importance or more frequent occurrence than the various lesions, catarrhal, inflammatory, traumatic, hyperplastic, infective and malignant, by any of which, as well as by constitutional conditions, the glandular structures or mucous surfaces of the cervix uteri may be so implicated as to give rise to morbid exudations therefrom. It being impossible, however, within my present limits to refer in detail to all these different causes of cervical leucorrhœa, I must here confine myself to some observations on the general characteristics and treatment of the non-specific discharges most commonly thus occasioned.

General Ætiology of Cervical Leucorrhœa.—These exudations consist primarily of a hypersecretion of the bland crystalline mucus, which is normally evolved from the muciparous follicles and epithelial surfaces of the rugous portion of the cervical canal. This, under pathological

conditions, becomes gradually altered in character as well as in quantity, and eventuates in that viscid glutinous or bird-lime like discharge, frequently acrid in alkalinity, which may be seen coating the gaping lips of a lacerated cervix in instances of chronic cicatricial ectropium, or extruding from the os uteri in cases of endo-cervicitis. If traced further up, that exudation will then be found, as was clearly described by Tyler Smith, adhering closely to the cervical crypts and rugæ, so as to fill the canal, and consisting chiefly of mucous corpuscles, oil globules, dentated epithelial cells, with which are also not infrequently found blood discs and pus corpuscles, enveloped in a thick transparent plasma, closely resembling raw white of egg, remarkable for its tenacity, alkaline in its reaction, and thus contrasting distinctly with the thin acid secretions of the vaginal mucous membrane.

Sources of Cervical Leucorrhœa.—These exudations may originate either from the sinous fossæ lined with cylindrical epithelium, between the plicæ palmatæ on the anterior and posterior walls of the cervix, which may be regarded as the secretory organs of the normal viscid crystalline mucus of the cervical canal, or from the so-called ovula Nabothi in the same region. The latter vesicles, composed of connective tissue and cylindrical epithelium, may, perhaps, like the Graafian follicles, be regarded as closed glandular vesicles, bursting periodically, though possibly, as Kölliker observed, they “are nothing more than dilated and closed mucous follicles, and in part also pathological new formations.” Be this as it may, however, the muciparous follicles, closed and open, which are normally the sources of the healthy cervical mucus, undergo a periodical enlargement and increase of secretory activity in connection with ovulation, and more especially manifest during pregnancy, when they secrete that mucous plug by which the cervical canal is then closed.

Consequences of Cervical Leucorrhœa.—Under normal

conditions the crystalline cervical mucus not merely acts as the natural lubricant of the canal, but, moreover, serves, in the interval of the catamenia, as a block by which the entrance to the uterine cavity is guarded against the admission of pathogenic germs, and also as a suitable medium for the passage of spermatozoa into the uterus, as well as a seal to its orifice during pregnancy. All these functions are impaired or destroyed when that secretion becomes abnormal or leucorrhœal, a condition which even in its most simple form must not only constitute a more or less serious constitutional drain, occasioning impairment of the patient's general condition, but also prove a likely focus of infective disease from the possibility of septic changes in the vitiated and adherent discharges. Moreover these exudations, especially when their morphological elements, their viscosity and alkalinity are most distinctly abnormal, are of direct pathological moment as frequent sources of irritation and erosion of the cervix, and above all are of special interest in reference to the causation of sterility. The latter point is one of great practical and often neglected importance in connection with the treatment of barrenness. In such cases it very frequently happens that operative measures to overcome supposed stenosis might be dispensed with if the circumstances, first clearly pointed out by Marion Sims, that probably the most common cause of sterility is an abnormal condition of the cervical secretions, was sufficiently recognised. That effect may be produced, either mechanically, by the calibre of the canal being so completely filled by the unduly viscid mucus as to interpose an insuperable barrier to conception, or chemically, by its being so hyper-alkaline and acrid as to occasion the immediate destruction of the spermatozoa. This fact has been abundantly confirmed by my own clinical experience of numerous cases in which the cure of sterility was effected by the

thorough curetting of the cervical canal, so as to destroy the diseased secretory surface, as well as to clear the passage from the mechanical obstacles presented by its morbid exudations.

Treatment.—In reference to the general pathology and therapeutics of the conditions leading to cervical leucorrhœa, I may observe that, in the old “Dublin Obstetrical Transactions,” upwards of twenty years ago, I pointed out their common connection with constitutional, and more especially with strumous diseases, and urged the consequent importance of conjoining constitutional treatment with whatever local measures might be necessary in such cases. In a more recent work^a I again endeavoured to enforce this still neglected truth, in which, however, I have since discovered that I had been anticipated by the late Dr. Tyler Smith, to some of whose views on the ætiology of leucorrhœa I have already referred. As Dr. Tyler Smith was one of the first and ablest exponents of the importance of constitutional treatment in leucorrhœal cases, and as his papers in the *Lancet* on leucorrhœa, though republished in his work on that subject five years subsequently, are probably not familiar to many at the present day, his remarks on this point may be here very briefly summarised. The glandular structures of the parts, he says, whence the discharge arises points to the influence of constitutional causes, and exemplifies why this affection should be so common in women of strumous habit and leuco-phlegmatic temperament. Moreover, it vindicates the importance of constitutional treatment, and directs attention to the more rational employment of topical remedies, it being evident that, although leucorrhœa of the cervical canal is sometimes cured by the use of caustics to the os uteri, in these cases they act as counter irritants to

^a *Vide* Clinical Gynæcology: a Handbook of Diseases Peculiar to Women, by T. More Madden, p. 148. London and Philadelphia. 1894.

the glandular structure. The indications of treatment, based on a knowledge of the minute anatomy of the os and cervix uteri, and the study of its pathology in leucorrhœa, show the importance of combining constitutional medicines and regimen with local applications, which, to be of any use in cervical leucorrhœa, should be applied, not to the vagina, or to the os uteri, but to the canal of the cervix.^a

The latter object may, I think, be most readily and effectively carried out by the employment of the curette, and for this purpose I have found Duke's dull-wire cervical curette most useful in the thorough removal of that viscid, tenacious discharge by which the canal is blocked in cases of cervical leucorrhœa, without any risk of too deep a denudation of the walls of the passage. Before employing this or any other curette, however, I generally find it advisable to dilate the canal freely by the two-bladed dilator which I have shown here on previous occasions; and, in my practice, immediately after curettage, the denuded endocervical surface is brushed over with iodised phenol, the patency of the passage being subsequently maintained by the use of salol bougies.

Such local measures should, generally speaking, as before observed, be conjoined with constitutional treatment, and more especially those remedies specially indicated by the strumous diathesis so frequently noticeable in patients suffering from chronic leucorrhœal discharges. Without again enlarging on this point, it may be enough here to say that in the way of general treatment, in the majority of these cases, the physician must rely chiefly on those ferruginous tonics—such as iodide, phosphite, or hypo-phosphite of iron—which, with mineral acids, quinine, cod-liver oil, and maltine, or malt preparations, are—in conjunction with suitable hygienic and dietetic measures—his ordinary re-

^a *Vide* Tyler Smith on Leucorrhœa, *Lancet*, July 7th, 1852.

sources in all strumous disorders. The only drug which would appear to me to have anything like a special or even a commonly remedial effect in ordinary chronic leucorrhœal cases is arsenic and its combinations, such as Donovan's solution, from which, when administered in small and long-continued doses, I have unquestionably experienced much benefit in the treatment of many cases of this kind.

The extent to which this paper has reached precludes my trespassing further on your patience by now reading the observations I had prepared on the endo-corporeal, fundal, and tubal forms of leucorrhœa on which I have not yet touched. These remarks I may, in conclusion, however, venture to express a hope of being permitted hereafter to submit to the Academy.

MR. E. H. TWEEDY thought that leucorrhœa was a symptom of almost every disease of gynæcology. He wanted to know some diagnostic difference between simple vaginitis and that due to gonorrhœa. For some time he had been using the microscope to distinguish between them, but was sorry to see that Dr. Madden threw some doubt on the bacteriological examination. He took a little of the pus on a slide, pressed out with a cover-glass, removed the latter and applied an aqueous solution of methyl violet. In a few minutes he washed it with water and replaced the cover-glass. The whole thing did not take more than two minutes. He did not see any use in the curette as a means of curing leucorrhœa from endocervicitis. Mild forms could be cured by the prolonged use of sulphate of copper and pyroligneous acid. The more severe forms could be cured only by cutting out the diseased part. He thought vulvitis occurring in married women was due to gonorrhœa much more commonly than Dr. Madden supposed. He did not always find what was put down as distinctive marks in the text-books—namely, swelling of the vulva and pus coming from the urethra, but he could find gonococci.

DR. ALFRED SMITH said that the connecting of leucorrhœa of childhood with sterility and some malformations of women occurring in after-life was a very interesting point and one which had never

occurred to him. He thought the term leucorrhœa was a bad word and he never used it himself. In the hospital dispensary he did not examine constantly for the gonococcus, but generally made the diagnosis from the symptoms. He frequently examined for it in private and in doubtful cases. He found great difficulty in finding the gonococcus in cases of old gonorrhœal infection. He only found it by irritating the vagina. He thought that a great deal of the chronicity of these cases was due to want of proper treatment. He hyper-distended the vagina and used corrosive sublimate, and quickly cured them. He agreed with Dr. Tweedy about excising part of the lips of the cervix for bad cases of endocervicitis.

DR. SMYLY wished to know whether there was any difficulty in recognising the gonococcus?

DR. ALFRED SCOTT said that if one got any of the pus and stained with methyl violet, it was almost impossible to miss them. Unfortunately, there were about eight micrococci which belonged to the same class. The most convenient check was to stain by Gram's method. If they stained by this method they are not gonococci. Cultivation was much more difficult, and took from one to two months.

DR. PARSONS was not prepared to hear so much doubt thrown upon the staining of gonococci. If he found them lying in or on pus corpuscles, and occurring in pairs or tetrads, he thought it was almost diagnostic of gonococci.

DR. WINIFRED DICKSON agreed with the views expressed by the last speaker. In Vienna, at the extern dispensary, finding the gonococci in the epithelial cells after staining with methyl violet was regarded as pathognomonic.

DR. BEWLEY also agreed with Dr. Parsons, but said that a certain number of observers had found organisms in perfectly healthy urethræ which they were unable to distinguish from gonococci. These cases were, however, very rare. So that for ordinary diagnostic work, finding the gonococci in the cells after staining with methyl violet was quite sufficient, but if going to give sworn evidence, one should make further investigation.

DR. SMYLY thought that it was very easy to cure gonorrhœa of the vagina, but that it was not so easy when Bartholin's glands and the cervical tissue had become infected. He did not understand the terms "follicular vaginitis" or "mucoid acid secretion."

DR. MORE MADDEN, replying, said that he was glad his paper

had given rise to so much discussion, but was sorry that discussion had been directed somewhat exclusively to the distinction between gonorrhœal and non-gonorrhœal leucorrhœal discharges. He expressed his doubt as to the ready diagnosis of gonorrhœal from ordinary leucorrhœa by the immediate recognition of the gonococcus, and was glad to see that Dr. Smith attached more importance to the history than to the microscopic appearance of the discharge. He thought the technical terms he had used required neither explanation nor apology, being such as might be generally found in most text-books of gynæcology.

THE TREATMENT OF SEVERE HÆMORRHAGE BY THE INFUSION OF NORMAL SALINE SOLUTION, AS PRACTISED IN THE ROTUNDA HOSPITAL.

By JOHN H. GLENN, M.D. ;
Ex-Senior Assistant Master, Rotunda Hospital.

[Read in the Section of Obstetrics, March 29, 1895.]

It is my privilege, through the courtesy of Dr. Smyly, Master of the Rotunda Hospital, to bring before you some cases illustrating the treatment of severe hæmorrhage by the infusion of normal saline solution.

During my four years' residence I had the opportunity of seeing four out of the five methods usually employed, namely:—

1. Munchmeyer's intra-connective-tissue injection.
2. Ponfick's intra-peritoneal infusion.
3. Rectal injection.
4. Intra-venous infusion.
5. Intra-arterial infusion (*a*) centripetal (*b*) centrifugal.

The latter method I have not seen.

Munchmeyer's method is, I think, the least useful, but the massage, which is part of the technique, is most important, especially when applied to the abdominal walls, as the large reserve of blood held by the abdominal veins is thus encouraged to flow towards the heart. Intra-peritoneal infusion was employed in several laparotomies, leaving three or four pints of saline solution (1 drachm to 1 pint) in the peritoneal cavity with markedly good results; the patients suffered from exceedingly slight shock, considering their loss of blood, and rapidly recovered; great thirst was a noticeable feature, but the cases, taken as a whole, were so favourable that I certainly

would employ it should I meet with similar indications, and this notwithstanding my firm adherence to the dry method.

We have not employed direct injection with the special curved syringe, as the danger of wounding the under-lying intestine is too great, though the likelihood of peritonitis following has without doubt been exaggerated.

Rectal injection has its principal advantage in that it can be employed at the will of the operator any time during an operation; that absorption takes place even during profound narcosis may be inferred from our experience of ether administered per rectum.

These methods, though useful, have in no degree the value of the two following—intra-venous and intra-arterial infusion—at least so far as the immediate treatment of profuse hæmorrhage is concerned.

Theoretically, transfusion of blood is the best method; statistics have on the whole been favourable, for in a total of 243 cases 46·9 per cent. terminated in complete recovery, and 14 per cent. were followed by temporary benefit. Of course an accurate sifting of these is quite impracticable, as it would be impossible to estimate the probable duration of life, supposing transfusion had not been employed. I merely quote these because of the prevalent opinion that transfusion of blood was a failure, whereas the very contrary was the case, but the difficulties attending its performance led to its general abandonment, except in hospitals. Whether infusion of arterial blood will prove better than the intra-venous infusion of normal saline solution must be left to the future. We know that blood excels saline fluid on nutritive grounds, but the dynamic effect of the operation being that generally required to restore suspended animation, saline fluid will usually be found sufficient. Of late years the advocates of normal saline solution go so far as to state that infusion of blood is absolutely harmful.

In the lectures delivered in the Royal College of Surgeons, England, in 1889, on Transfusion, William Hunter deals at length, both from an experimental and physiological point of view, with the dangers of, and objections to, transfusion of blood, whether by the direct method or after defibrination, or after admixture with phosphate of sodium according to the method of Braxton Hicks. He sums up thus—"Any advantages that transfusion of red corpuscles may have over simple saline injections are counter-balanced by the dangers attending the simultaneous injection of the white. In the case of defibrinated blood, the latter so preponderate that transfusion of defibrinated blood is an operation not only dangerous in itself, but one whose practical value by no means serves to compensate the additional risks run in carrying it out."

This method was first suggested in England by Sir Spencer Wells. Landerer and Bischoff in Germany; Jennings, Arbuthnot Lane, and Herbert Spencer in England were its pioneers.

Goltz first showed that death from hæmorrhage lies in loss of fluid and incomplete filling of heart, not the loss of corpuscles or hæmoglobin, and that as long as the blood can be kept moving by injection of fluid life can be saved.

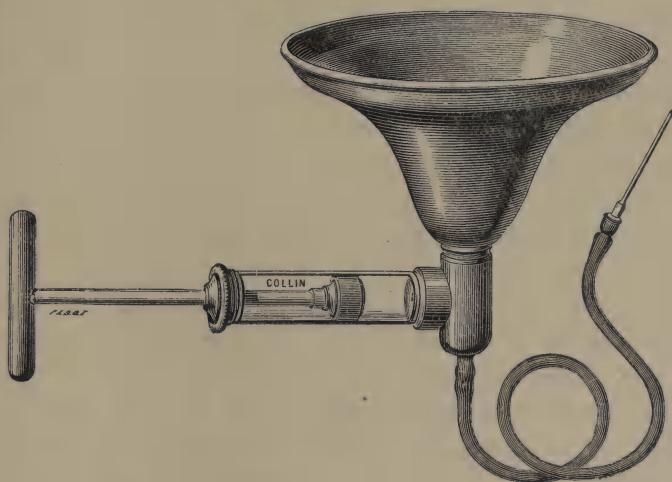
For years this method has been well known to experimental pathologists and workers in physiology, and it has been a constant practice to thus resuscitate animals exhausted by loss of blood, but only since 1881 has it been successfully applied to man. I purposely exclude the well-known experiments on cholera patients in 1848.

Technique.—In the following cases I employed the transfusion apparatus made by Collin, of Paris (Fig. 1), and found it admirable and easy to work. At the same time I feel the strong point of this method lies in the extreme simplicity of the whole proceeding, requiring no special complicated apparatus (which is probably out of order when required), but merely

one which can be extemporised in any house, however remote from instrument makers—a clean jug, a piece of India-rubber tubing and a cannula (a watch-key will answer admirably) are all that one requires. The skin over the bend of the elbow having been carefully washed with hot water and soap, is disinfected with alcohol and corrosive sublimate, a turn of

Fig. 1.

TRANSFUSION DU SANG.



Transfuseur du sang de *Collin*, avec lequel il est impossible d'injecter de l'air dans les veines.—Un flotteur plus léger que le sang et plus lourd que l'air reste au-dessus du tube de dépense et s'oppose au passage de l'air, qui s'échappe toujours, quoi qu'on fasse, par l'orifice supérieur.—La manœuvre consiste à tirer et pousser le piston *doucement*. Le tube de cristal contient 10 gr. de sang.

bandage is put on above the elbow to render the veins more prominent, an incision one inch or more in length is made along the course of the median-basilic or median-cephalic vein—preferably the former as it is usually larger, and though it lies over the brachial artery it is separated from it by the semi-lunar fascia of the biceps. The vein is dissected up for

half an inch, and a double ligature passed beneath; the loop is cut, and the lower or distal ligature tied. A single knot is now tied on the proximal ligature, and the apparatus being ready a transverse cut is made in the vein, the cannula inserted and the upper ligature tightened upon it. The cannula should have a groove upon it to prevent slipping. After the infusion the cannula is withdrawn, the ligature tightened, a second knot applied, the vein cut between the two ligatures, and an aseptic pad put over the wound. It is a question of opinion whether it is advisable to ligate the vein or not; in my cases we did so.

Several important questions now arise:—What should the rate of injection be? Panum gives three ounces per minute as the maximum to inject; *slowly and regularly* is generally the most important matter in the operation. The dangers of neglecting this very important point are—over-filling of the heart, sanguineous œdema of the lungs, hæmorrhagic exudations into the intestines, injections of the capillaries—especially of the intestinal mucous membrane, and more rarely those of the stomach—fever, shiverings. These complications are explained by the effect of the alternate weakening or paralysis of the heart, and its vigorous action after the infusions.

What should the temperature of the saline solution be? About $102\cdot2^{\circ}$ as it is put into the apparatus; this allows for cooling down to blood-heat in passing through.

As regards the quantity to be injected each individual case has its own requirements; certainly we ought to go on until a slowing of the pulse with an increase of volume is noticeable. I shall only remind you that an increase of blood to the extent of *four-fifths of the normal amount* can be borne without injury to the individual into whom it is injected; later writers favour large quantities. Horrocks used two to six pints, Herbert Spencer a pint and a half to

two pints, Bernard Pitts two to eight or ten pints, while in our cases eight was the maximum. Alcohol added has no advantage.

Arterial infusion is in its infancy, but I believe will yet become a recognised operation in severe cases. That fatal cases have occurred during venous infusion is undoubtedly true, though to no serious extent. These Landois explains in the following manner:—"After a severe loss of blood the circulation is slowed, the difference in pressure between arteries and veins becomes smaller. In the highest degree of anæmia only tiny, slowly circulating streams of blood passing through its capillaries keep up the excitability of the medulla oblongata. If a larger quantity of blood is conducted *in a short time* through a vein, then there occurs first of all, *along* with increase of pressure, a stasis of blood in the large venous trunks, and feebly acting right side of the heart. Thus, though it be but for a few seconds, a further interruption of the circulation may take place in the medulla oblongata, which, with the already extremely limited nutrition of this organ, may be enough to entirely stop its function." In these circumstances Landois recommends arterial, and especially centripetal arterial, infusion first advocated by Hueter.

The radial artery is selected, the cannula directed towards the aorta; *on infusing* the valves close. The blood at the commencement of the aorta being thus placed under high pressure escapes into the side branches, and flows through the carotids and subclavians to the medulla oblongata, to which it brings immediate help. In order that blood may not press into the branches of the descending aorta in too great quantity both femorals should be compressed, and moderate pressure applied to the abdomen. This method has certain disadvantages—namely, enfeeblement of cardiac muscle, noticed by diminution of heart's activity during injection,

and greater penetrability of the pulmonary vessels; but, on the other hand, when arterial infusion is made *from* the aorta the capillaries act as a perfect filter, at the same time levelling the temperature. If too great a pressure is employed rupture of these delicate vessels ensues, with swelling of the hand and hæmorrhage.

The loss of an artery is not worth speaking about, as only in grave cases is the operation justifiable. One other point is worthy of notice—in profoundly anæmic fat patients it is difficult to find a vein suitable—a case in point my friend and colleague, Dr. Tweedy, and myself met with. I now regret not having opened the radial artery.

I therefore sum up by thinking that one or other of these methods should be employed in cases of severe hæmorrhage, which must be decided by the special case. I would especially sound a note of warning against being in a hurry to employ it in *post partum* hæmorrhage; but in cases where bleeding points have been secured I believe we have a method which will save many lives in days to come.

CASE I.—M. M'C., aged thirty-nine. Primipara. Had been four days in labour before admission. An unsuccessful attempt to deliver with forceps had been made by a practitioner outside; she was admitted in a state of collapse. The pelvis was deformed and the head freely movable above the brim. Cervix was torn and hanging down into the vagina by a narrow pedicle, there was profuse hæmorrhage, and her condition was so grave, that delivery was postponed, the vagina being plugged and every effort made to stimulate her. During the night the head moulded and passed the brim and no difficulty was experienced in delivering her with forceps, a dead child with a fractured skull being extracted; the placenta was adherent, and was removed by hand. The patient was in a very exsanguine condition, and *five pints* of saline solution were infused into the right median-cephalic vein. After a pint the pulse could be faintly felt, and when it became sufficiently full the infusion was discontinued; the colour also returned to her cheeks, and we had hopes of her recovery, but to our disappointment five hours after

she sank and died. With our further experience we should now infuse a second time on seeing symptoms of collapse setting in.

CASE II.—Miss B., aged thirty-eight, admitted to the Auxiliary August 7, 1893. Operation, September 12, 1893. Total hysterectomy by the combined method was performed by Dr. Smyly. The operation was rendered especially difficult by numerous adhesions to the omentum and intestines, and she lost much blood, was collapsed and pulseless. *Four pints* of saline solution were infused, and she made a good recovery, rapidly gaining strength. The only feature here I would call attention to was the increased urinary secretion which I remarked in several of the other cases.

CASE III.—L. M'G., aged twenty-six. Symphysiotomy. Operation is described in the Society's Transactions for this year. She suffered from traumatic *post partum* hæmorrhage. *Eight pints* of saline solution were infused, and she rallied well. The temperature rose on the fourth day. A puerperal ulcer developed, involving the whole vagina, and she died on the twelfth day. I think I may fairly claim this as a success, so far as infusion is concerned.

CASE IV.—Mrs. H., aged thirty. Ovarian tumour. Operation, September 28, 1893. The operation was one of considerable difficulty—dense adhesions, general oozing, slipping of one of the ligatures with retraction of the ovarian artery, and the formation of a hæmatoma behind the peritoneum; this was treated, but great loss of blood took place before all was secured. Patient was re-opened for fresh hæmorrhage and flushed out with hot water; the bleeding ceased, and a drainage tube was put in; patient was very collapsed, with a thready pulse of 136. *Seven pints* of saline solution were infused, and the pulse fell to 114, with better volume, while her aspect improved. She complained of great thirst. From this on she made a good recovery.

CASE V.—E. M'N., aged forty-three (?) Large fibro-cystic tumour. Dense adhesions to intestines, especially on the right, rendering the tumour immovable; after separating the adhesions, which bled freely, the tumour was removed, and all bleeding points secured; this not before much blood had been lost. *Seven pints* were now infused. She made a good recovery.

CASE VI.—A. C., aged thirty-three. Double hydrosalpinx. Operation, December 28, 1893. Both tubes burst, adhesions were exceedingly dense, right broad ligament was tied in five places, the left in seven, patient greatly shocked, and was infused with saline fluid. She lived for five days after.

CASE VII.—This was a patient in the last stage of septicæmia. Believing an empirical trial to be permissible, we infused her with three pints, but I regret to say with no success.

Landois has collected 29 cases where fever-free blood was injected into septicæmic or pyæmic patients—24 unfavourable, 1 doubtful, 4 favourable.

DR. TWEEDY said that through Dr. Glenn's kindness he had seen most of the cases infused. He had himself infused eight cases which had occurred in the hospital since Dr. Glenn had left. He agreed with Dr. Glenn as to the enormous improvement that took place in the patient's pulse and appearance, but thought the improvement very transitory. He thought it had saved several lives by warding off impending syncope. He believed the saline infusion acted as a stimulant to the heart. It, however, flowed out of the vessel nearly as quick as it went in. There was free urination and perspiration. In one case fluid poured from a drainage-tube in the abdomen ten minutes after infusion. He thought that it was very rarely that the patient died from absolute want of blood. It was shock that killed her. Nearly as many blood-corpuscles were found in a woman who died of hæmorrhage as in a chlorotic girl. The woman dies because the heart is too sluggish, not because it has nothing to contract on. He had used a simpler instrument than that shown by Dr. Glenn. If he was not absolutely sure of his asepsis he would not ligature the vein but only put on a compress and bandage, following Dr. Stoker's advice.

DR. A. SMITH had seen several cases infused with saline solution, but only with temporary improvement. He had done it two or three times himself. In one case the ligature had slipped from an ovarian pedicle. The patient was very collapsed. He reapplied the ligature and put saline solution into the abdomen and found slight improvement, which died away very soon. He then put

the patient in an exaggerated Trendelenberg's position and got great improvement. The patient recovered. He looked on the case as one of auto-infusion. He had another very similar case in which Trendelenberg's position seemed to do a great deal of good. He was not a strong advocate for transfusion. He thought the principal question was, "When to transfuse?"

DR. S. M. THOMPSON said he had seen transfusion used in 1868 for cholera. There was great temporary improvement, but they always died in the end.

DR. BATE mentioned that, when in Berlin six months ago, he had seen a case of miscarriage brought in, in a state of collapse. Two or three pints of saline infusion were put into the breast, which became enormously distended. He examined the breast two or three days afterwards and found it had quite recovered its normal size. The patient derived great benefit from the injection and recovered.

DR. SMYLY said he remembered Dr. Beatty reading a paper on a case of P. P. H., in which Dr. Robert MacDonnell had infused defibrinated blood. The woman made a good recovery. When Assistant in the Rotunda he saw transfusion performed, and the woman died of pulmonary embolism. He had no hesitation in saying that there was a very great improvement on the old method. He had not seen any evil results follow from the salt-and-water method. He had seen patients recover who otherwise he did not think would have pulled through. In answer to Dr. Smith's question of When to transfuse, formerly, by the old method he would have said, when in doubt, don't operate. Now he would say, when in doubt, operate. Salt and water was the best stimulant that could be given. He had had one patient transfused simply for shock and not for loss of blood. He thought that the credit of reintroducing this method in Dublin was altogether due to Dr. Glenn.

DR. LANE agreed with Drs. Tweedy and Smith in the only temporary effect produced in the majority of cases by transfusion. He had seen Dr. Macan use an instrument very similar to Dr. Tweedy's, but which had a graduated glass jar, which was an improvement. If the effect of the saline infusion was only to stimulate a sluggish heart, the question whether alcohol or some other stimulant would not do as well would have to be considered.

THE PRESIDENT said that the first successful case of transfusion occurred when he was at the Rotunda. It was done by Dr. R.

MacDonnell, and one of the students furnished the necessary blood, 8 ounces, which was defibrinated. A much smaller quantity was used than now. It was when a secondary collapse had set in, several hours after delivery, that the transfusion was done.

DR. GLENN, replying, said he was greatly indebted for the kind way in which his paper was received, and was especially obliged to Dr. Smyly for allowing him to do the cases. As regards the quantity infused, he thought the present results in which pints instead of ounces were used, were more favourable. Other stimulants, as alcohol and ether, were always used in conjunction with infusion of saline solution. He thought the instrument he used superior to Dr. Tweedy's. The latter would require 9 feet of tubing, if the infusion was being done into an artery, but in his he could get the necessary pressure with the syringe. In Dr. Smith's cases, the elevation of the legs could not have been the cause of the patient's recovery, considering the very small amount of blood in the legs. The advantage of Trendelenberg's position was that the abdomen was raised and pressure applied to it. The manner of infusion described by Dr. Bate was merely Munchmeyer's method into the connective tissue. It was an unsatisfactory method, as it was too slow. Infusion was very unsuccessful in cholera.

NOTES ON A CASE OF IMPERFORATE ANUS, WITH EXHIBITION OF FROZEN SECTION.

By F. W. KIDD, M.D.;

Master, Coombe Lying-in Hospital.

[Read in the Section of Obstetrics, May 10, 1895.]

THE case which I wish to bring under your notice this evening is one of considerable interest to the embryologist, the anatomist, the surgeon, and the obstetrician. The interest in this case is increased by the fact that it is accompanied by a frozen section of the parts, which has been most beautifully prepared and mounted by Dr. Dixon, of the Trinity College School of Anatomy.

Perhaps a little generalisation as regards this deformity may not be altogether out of place. With regard to the frequency of its occurrence, it has been put down by different authorities as ranging from three in 66,654 deliveries, or one in 22,218, to one in 11,000 births (Cooper and Edwards). Out of 375 cases collected by Leichtenstern, there were 241 males to 134 females. The following quotation from Prof. M'Alister's "Text-book of Human Anatomy" gives a very clear and concise explanation of the way in which the deformity may arise—"In the body of the embryo a tube of hypoblast forms the terminal part of the intestine, which inferiorly shows a trace of its prolongation into the neuroenteric canal. This latter communicated dorsally with the central canal of the spinal cord; but this post-anal gut speedily vanishes, leaving the intestine closed behind. At the spot on the surface where the anal opening is subsequently found there is a pit-like invagination termed the *proctodæum*, and lined with epiblast. This extends inwards

from the surface beneath the tail fold opposite the blind end of the hypoblast, into which its fundus ultimately opens. In cases where the proctodæum is undeveloped, or misses the hypoblast, the fœtus presents the condition of imperforate anus. In such cases a weak cord, the obliterated post-anal gut, is often recognisable, and is sometimes sufficiently distinct to be a useful guide to the surgeon. The central portion of the alimentary tract or mesenteron is formed from the hypoblast. This hypoblast represents only what is to constitute the mucous membrane of the alimentary canal, the other coats being formed by this hypoblastic portion becoming enveloped in a layer of mesoblast, which divides into two portions, the outer forming the peritoneal covering, while the inner develops into the muscular and connective tissue elements of the intestinal wall."

Owing to this explanation, there are many different forms and degrees, and the classification usually adopted is one followed by Bodenhamer and others, and is as follows:—

1st.—Stenosis of anus at the margin or extending higher.

2nd.—Complete occlusion of anus by membrane or by common integument.

3rd.—No anus present, rectum being abnormal and ending at a greater or less distance from normal situation of outlet.

4th.—Anus is normal—rectum is at variable distance, either obstructed by membrane or occluded for a greater or less distance.

5th.—Anus opens at perineal or sacral region.

6th.—Rectum opens into bladder, urethra, or vagina, sometimes forming cloaca—normal anus being absent.

7th.—Rectum normal, except that ureters, vagina, or uterus open abnormally into it.

8th.—Rectum is entirely wanting.

9th.—Rectum and colon wanting. Sometimes an opening leads into the intestine at some other part of surface of body.

The case—the details of which I shall now enumerate—belongs without doubt to the fourth division of this classification. This particular form is perhaps more likely to be overlooked than many others, because the anus is to all appearance perfectly formed, and the discovery is only made when doses of castor oil or other purgatives have failed to procure an action of the bowels, perhaps two or three days after birth, or when vomiting of obstruction and regurgitation sets in. Dr. Ball, in his book on the Rectum and Anus, has mentioned a number of interesting varieties—some in which the deformity was due to an abnormal adhesion of the sides of the lower portion of the rectum, in others a membrane existed above the sphincter, and in yet others these conditions seemed amalgamated. In other cases the constituent portions of the intestine passed parallel to each other, the lower portion usually passing in front. One of these is a very remarkable case, recorded by Amussat, in which the anal portion communicated with the vagina, while the rectum ended in a *cul-de-sac*. In this case an incision was made behind the anus. The rectum having been reached was freed from its attachments, was brought down and stitched to the skin, the anus and its communication with the vagina not being interfered with. This procedure afterwards became well-known as “Amussat’s operation.”

Ball also mentions that there are two theories put forward to account for the deformities of this, the fourth variety—one is that it is due to a failure in the meeting of the mesenteron and the proctodæum; the other, that it is due to an intra-uterine inflammatory occlusion of the fully developed intestine. The advocates of the latter theory contend that the fact of the presence of a cord, in some cases continuous with the outer tunics of the bowel, connecting the two portions of intestine is proof positive of their theory, while their opponents hold that this cord may exist without any intra-

uterine obliteration of the intestine, and assert that the explanation exists in the fact that the original hypoblastic intestinal tube was covered over and lined outside by a layer of mesoblast, which divided into two portions—the outer forming the peritoneum, while the inner layer formed the muscular and connective tissue layer. When the development of the *cul-de-sac* of mesenteron becomes arrested, it does not follow that the growth of the other layers originating from the mesoblast should be arrested too; it can easily be understood that, where there is no mucous coat to be surrounded, this portion of mesoblast can form itself into a rounded cord. Again, it is rare, unless with very severe inflammation, to find that a mucous canal can be obliterated.

In a case detailed by Professor Bennett, occurring at Sir P. Dun's Hospital, he failed to meet the rectum by perineal incision—a colotomy was performed, but the child died. In this case there was a strong firm cord extending from the anus to the *cul-de-sac* of the rectum. Microscopical examination of the cord in this case showed that it was composed solely of muscular and connective tissues without any mucous membrane. Another important point is, that if occlusion was caused by adhesion, the result of inflammation, we should find columnar epithelium at the top of the anal *cul-de-sac*; however, in Bennett's case Ball did not discover a trace of glandular epithelium. All this goes to prove that in this case the occlusion did not depend on inflammatory adhesion.

Dr. Ball suggested that a microscopical examination should be made of the tissues of the anal *cul-de-sac* in the case which I now exhibit, but I regret that such an examination has not yet been made.

The history of the case in point is as follows:—

CASE.—Mrs. M. R., on her twelfth pregnancy, was delivered of a female child on the 26th January, 1895. The second stage lasted five hours fifty-five minutes; the note stating that the delay

was caused by an ankylosed coccyx. The note on the third day is as follows—"Baby not well, has passed water, but the bowels have not acted since birth—no discharge of meconium." An endeavour was made to introduce a soap suppository. This having proved unsuccessful, the child was brought under my immediate notice. The anus was found normal in every way, but it was impossible to pass anything, even a fine probe, higher up than about half an inch. The nature of the case being apparent, it was then decided to try and reach the *cul-de-sac* of the bowel from the anus already existing. The tissues were divided backwards from the anus to the tip of the coccyx, so as to afford more room. The dissection was made with a fine tenotome, and the exploration was carried out by using the point of the little finger. A spring wire nasal speculum of small size was used to try and get a view of what tissues were being cut, but was not of much use. To any person who has not tried it this procedure may seem very simple, but in practice it is astonishing how little room there is between the rami of the ischia in a newly-born child, when a finger, even the smallest one, is in the rectum. The whole exploration seems to be more or less one of haphazard. I followed the advice of most authorities, and kept close to the anterior surface of the coccyx. Amussat has recommended the entire removal of the coccyx in this operation—it gives so much more room. The exploration was made for a depth of about an inch and a half or an inch and three-quarters from the anus, but the *cul-de-sac* of the bowel was not recognised. There certainly did not exist in this case any cord-like structure to guide one to the *cul-de-sac*. Neither, when separating the tissues (although, as may be seen by the specimen, I was within about $\frac{1}{16}$ of an inch of the *cul-de-sac*), did I ever feel any impulse on the child crying, nor had I any indication from the sense of touch, that the *cul-de-sac* of the bowel was so near. Having failed, the wound was well powdered with boracic acid and plugged with iodoform gauze. On the following day another attempt was made to reach the bowel from the anus, but with no greater success. I hesitated using the knife further from the anus than I could see, or could reach with my finger tip. It was astonishing how the child had stood the operation of the preceding day, and how little sign of hæmorrhage there was. Finding every procedure fail, it was decided to do a left inguinal colotomy. The small incision was made on a level with the crest of the ilium, and at an angle of about 30° with Poupart's ligament.

The superficial blood-vessels were easily avoided, as the amount of abdominal distension caused them to be very well marked. The tissues were divided on a director, and when the peritoneum was on the director it was so thin and diaphanous that one of the students, standing quite close by, said there was no tissue at all on the director. The intestine almost "jumped out" into the wound, and was diagnosed as large intestine by the longitudinal bands on it. The peritoneal surface of the intestine was stitched in a circle to the wound, and the bowel opened. A great quantity of meconium escaped. The wound was dressed with boracic acid, iodoform gauze, and a pad, and the child was fed. It seemed to be relieved by the operation, but gradually sank, and died on the sixth day after the operation, or ten days after its birth.

At the *post mortem* examination, made by Dr. Dixon, there was no evidence of peritonitis, so that the child's death seemed due to exhaustion.

There are, to my mind, several points of interest, namely:—

a. The absence of any cord-like prolongation between anus and *cul-de-sac* of the bowel that would lead you to the latter.

β. The very small amount of hæmorrhage after the two endeavours to reach the bowel from the anus, and the absence of any sign of peritonitis at the autopsy.

γ. Considering the position of the rectum, it is an interesting question for theorising whether the rectum could or could not have been drawn down to the anus by any surgical process simulating Amussat's operation.

δ. It is worthy of note that, although the tip of my finger must have been within one-sixteenth of an inch of the rectum, there was no perceptible bulging, and no indication of its presence.

I lay no claim to originality, but I think that the case is one sufficiently interesting to bring before the members of this section of the Academy, because it might fall to the lot of any obstetric surgeon to treat some case exactly similar to the one I have just described.

DR. GLENN said they were very grateful for the opportunity of seeing the frozen section. In two cases he had seen operated on in the Rotunda one had recovered, but in the other the rectum could not be found. He would remove the coccyx if he had a case similar to that of Dr. Kidd's. He would prefer a Littré's operation to a loin operation. The advantage of a Littré's operation was that after the bowel was opened one could wait till the child got stronger, and then, by passing down a bougie it could be cut on through the anus. If the rectum was brought down and stitched to the anus there was great trouble in keeping it dilated afterwards. In this case he thought everything was done that could have been done.

DR. SMITH, when Assistant Master at the Rotunda, had operated on a case, and had succeeded in opening into the rectum. He stitched the rectum to the anus. The child only lived a few days. Except when there was only a simple membrane between the rectum and anus, he had not seen any cases operated on which had recovered.

DR. KIDD, replying, said that the chief interest depended on the frozen section, which was beautifully made and mounted. He had not intended the colotomy to be a permanent operation. If the child had recovered he intended exploring further from the false anus. But the child gradually sank after the operation.

SECTION OF PATHOLOGY.

MELANOTIC TUMOUR OF EYEBALL: DEATH FROM SECONDARY GROWTHS.

By J. B. STORY, M.B., F.R.C.S.;
Surgeon to St. Mark's Ophthalmic Hospital;

AND

W. R. GRAVES, L.R.C.P., L.R.C.S.;
Pathologist to the City of Dublin Hospital.

[Read in the Section of Pathology, November 2, 1894.]

CASE I.—Mr. H., aged fifty-four, consulted me in February, 1890. He stated that some six years before, in South Africa, he fell on a road and blackened his right eye—just an ordinary black eye—but he never noticed anything wrong till about six or eight months ago, when a black spot was observed on the white of the eye. This black spot has grown rapidly in size, and advanced towards the sight, and lately the eye has become tender. On looking at him from a short distance one would have supposed the eye was suffering from a large hernia of the iris, but a closer examination disclosed that the apparent hernia was a soft, lobulated, melanotic tumour, lying partly on the cornea and partly on the sclerotic at the outer margin of the cornea. Large tortuous blood vessels ran towards it from the fornix of the conjunctiva near the external canthus. Its circumference was irregularly spherical, diameter about 13 mm., by 11 mm., and it was raised about 8 mm. above the surface of the cornea. It was not apparently adherent to the cornea, and its scleral portion was distinctly beneath the conjunctiva. About $\frac{1}{3}$ of the tumour covered the cornea, the remaining $\frac{2}{3}$ lay over the sclerotic. The eye was, in other respects, normal. Tn. pupil active. Myopia 3 D. V. = $\frac{5}{10}$. No tumour visible ophthalmoscopically in interior of globe.

I abscised this tumour on February 11th, 1890. It was found to spring from the sclerotic about 2 mm. from corneal margin. It

did not adhere to the cornea, though the outer third of the cornea was distinctly depressed by its pressure. It lay beneath the bulbar conjunctiva, and sprang from numerous little black spots in the sclerotic, 2 mm. from corneal margin. These black spots extended about 7 mm. or 8 mm. in a line parallel to the corneal circumference. These black spots were freely cauterised.



Tumour before
removal.



Site of origin
in Sclerotic.

On February 20th, black spots were still visible in the region of the pedicle, but they were found to be lying loose in the bottom of a perfectly white depression left in sclerotic by the cautery.

In the autumn of 1890, a small, black tumour, not so large as the head of a small pin, appeared in the conjunctiva behind the insertion of the external rectus muscle. It was also abscised, and no further growth came in the conjunctiva, or in the eyeball, although for some time I suspected an intra-ocular sarcoma was present. Shortly after the original tumour was removed, and the pupil dilated, I made a thorough examination of the fundus with the ophthalmoscope. I then observed, at the most extreme temporal periphery of the fundus, a great irregularity in the pigmentation of that region. Dense masses of black pigment extended all along the extreme border of the fundus, from nearly the upper end of the vertical meridian all along the temporal side of the eye. Inside this irregular, jagged, black region, a reddish-white district was seen which almost simulated a detached retina. The rest of the fundus was like that of any normal, dark-haired myopic of middle age. The left eye was examined and did not exhibit any such pigmentary irregularity, nor could such be seen in nasal side of right eye. The appearances are hard to describe. The pigment projected from the outermost visible border of the fundus in irregular jagged masses, pointing towards centre of fundus, and the jagged tops of the pigment masses lay in a narrow, irregular, reddish-white district, sharply marked off from the normal fundus.

I examined Mr. H.'s eye frequently, and as I never detected any growth or change in these pigment masses, nor any change in the eye itself during a period of more than three years, I must conclude that what I observed was not a neoplasm. It gave me considerable anxiety for some time, and is still a subject of interest. The original tumour and the metastatic growth in the conjunctiva were kindly examined for me by my friend Dr. Graves, Pathologist to St. Mark's Ophthalmic Hospital, who will himself describe what he found. Suffice it here to say the tumours presented the aspect of alveolar sarcomata.

After the removal of the sclerotic tumour, Mr. H. went on excellently, gained in flesh, increasing two stone in weight in less than a twelvemonth, and the tumour did not recur in the cicatrix. But in the autumn of 1890, a serious warning of the fatal termination showed itself in a metastatic conjunctival tumour not so large as a pin's head, and distinctly situated at a distance from the original growth. However, after that, he enjoyed excellent health until the spring of 1893, when he began to have trouble from a tumour in the region of the parotid gland. He presented himself on the 19th of May, 1893, with a large, movable, oval tumour, about size of a hen's egg on his cheek, just in front of the right ear. This was evidently an enlargement of the præauricular lymph gland. This tumour was removed by Mr. Franks, through whose kindness I am able to present microscopic sections of the growth prepared by Dr. Graves. It, also, is an alveolar sarcoma. I only saw Mr. H. once after this tumour was removed. The result was apparently perfect—apparently only, for he died in March of the present year, just four years after the excision of the original scleral tumour. I have been informed by a relative that two tumours came in the jaw about Christmas last, and some were in his body too. He was three months laid up. Convulsions occurred before the end.

CASE II.—M. P., H. C., 149, June, 1882, pensioner, aged seventy-six, was sent to me by my friend the late Dr. O'Connor, of Fethard, in 1882. The only history to be obtained was that some ten years previously he had noticed the left eye to be red, but the right was then good. On examination, the globe appeared to be replaced by a large, firm, lobulated tumour, hard in places, and mostly slate-coloured; not tender, but easily made to bleed; freely movable, and the surface

not ulcerated; eyelids distended and enlarged, but not otherwise abnormal. The tumour followed the motions of the other eye accurately, and was evidently either growing on the surface of the eyeball or projecting from its interior. It projected about 1 cm. more forwards than the right cornea, being about 1.5 cm. below lower lid, and 2 cm. below lower margin of upper lid when looking straight in front. Blood vessels of lid and cheek not enlarged, and no glandular implication. Tumour and globe enucleated under ether; optic nerve apparently healthy. Tumour was found to spring from the surface of the eyeball, the interior of the globe being normal. The tumour was a firm, lobulated melanotic growth, covering the whole anterior segment of the globe, and apparently originating in the corneo-scleral margin. The patient went home perfectly well, and has since been lost sight of.

CASE III.—Capt. H., aged fifty-seven, was sent to me by my friend Dr. Berry, of Mallow, who, I regret to find, has since retired from practice. His right eye had been blind for a considerable time back in consequence of a melanotic growth, which covered the cornea almost completely, and projected over the sclerotic to such an extent as to cover a circular space whose diameter was double that of the normal cornea. The tumour was firm and lobulated, covered with epithelium and did not bleed. About one-half of it was distinctly pigmented, the other half of a light slatish colour. It projected about 1 cm. above the surface of globe. It was impossible to decide positively, until after removal, whether the tumour originally sprang from the choroid and had perforated the eyeball, or whether it was a tumour of the corneo-scleral margin.

I removed the eyeball and tumour in December, 1885, and then ascertained that the growth took its origin from the corneo-scleral margin, and to some extent burrowed under the corneal epithelium. The microscopic sections made at the time exhibited appearances similar to what is described as a cylindroma, but more satisfactory sections have been since prepared by my friend Dr. Graves, who will, himself, describe what he has seen. This patient was alive and in good health for some years after the operation, but whether he is still alive I cannot say.

CASE IV.—Miss S. E. (B. p. 281., C. p. 3). My friend the late Dr. Darby, of Bray, sent an unmarried lady, aged thirty-three, to consult me in July, 1881. The history I received was, briefly,

as follows: She had erysipelas over her left temple at the age of three, and had been hit by a turf on the left eye six years ago, but her sight had never been in any way defective till twelve months ago, when she perceived a ball of fire before the left eye, and the sight began to fail. For the past three weeks she had suffered from pain in the eye and neck. The patient was a healthy-looking, well-formed individual, and the family history was good, except that a brother died of tumour of base of brain. The right eye was myopic—4 D. V. = $\frac{5}{15}$; the left had V. = O.; shallow anterior chamber, pupil irregularly oval, dilated, and fixed; lens hazy, lower half of retina detached, and illumination of fundus only to be obtained above. T+1. Diagnosis, secondary glaucoma, and possibly intra-ocular tumour. Eserin relieved the pain, but produced no other effect. Three weeks later I saw the lady again. The condition was unchanged, except that I was now able to detect large blood vessels ramifying over the left iris. I advised immediate enucleation, as I was of opinion that a malignant new growth was present.

This occurred in July, but it was not till November that the patient consented to the operation, which she only permitted after a bluish nodule began to project from the surface of the sclerotic between the insertion of the external and superior recti. The appearance of this nodule confirmed my diagnosis and induced the patient to submit to the operation. At this time it was possible to get a dull illumination of the fundus all round, except at outer upper side, where I could see a small, brilliant, half-moon-shaped red spot, below which lay a dark-grey detachment of the retina, succeeded lower down by a bright, grey-white detachment.

I removed the eyeball, November 12th, and found a leucomelanotic tumour growing from behind the ciliary region, about the size of a pea, total detachment of the retina, and hæmorrhages in the vitreous. The bright red object observed with the ophthalmoscope was probably one of these hæmorrhages.

This lady lived in apparently perfect health till 1890. I saw her alive and well in September, 1890. She then got influenza, and a bad cough, and died in March, 1891. Before her death her skin was bronzed, as in Addison's disease, and her liver was greatly enlarged. I have heard from my friend Dr. Loverock, who treated her during her last illness, and his opinion coincides with my own, that she was suffering from secondary cancer of the liver.

DR. GRAVES reported as follows :—

“ Case I.—The original tumour and recurrent small growth on the eye, together with the subsequent growth from the parotid region, supply three distinct sets of sections, each of which is of interest. Taken as a whole, the case has been an instructive one to myself, as it has settled the doubt in my mind as to the classification of these peculiar sarcomata. I shall deal with the tumours in the order of their occurrence. The original tumour, from the corneo-scleral junction, might have been used to illustrate Ziegler's section on sarcomata of peculiar types, and shows the agglomerated arrangement of groups of epithelial-looking cells, separated by well-marked, fibrous septa; the pigment cells lying chiefly in the septa. The recurrent growth on the eye was very small, not larger than a pin's head, and might easily have been taken for a pigmented epithelial tumour, springing from the conjunctiva. The recurrent growth, from the parotid region, has not only reproduced the original type of pigmented alveolar sarcoma, but has furnished various types of sarcoma. The extreme malignancy of the pigmented sarcomata of the eye is well illustrated by this case, and, perhaps, a lesson may be learned as to the expediency of the removal of an eye which is known to have produced such a tumour, no matter how completely the tumour may seem to have been removed.

“ Case II.—Large, spindle-celled, melanotic sarcoma.

“ Case III.—Capt. H.—Mixed pigmental sarcoma, chiefly spindle-celled.

“ Case IV.—Miss E.—Melanotic, round-celled sarcoma.”

SPONTANEOUS FRACTURES OF THE CLAVICLE.

By E. H. BENNETT, M.D., F.R.C.S.;

Surgeon to Sir P. Dun's Hospital;
Professor of Surgery, Trinity College.

[Read in the Section of Pathology, November 4, 1894.]

THE mechanism of the various fractures of the clavicle is a subject of much interest, and of great practical importance to the surgeon in making the diagnosis of these injuries. I have already discussed this subject in this Section of the Academy in part, dealing at that time chiefly with fractures of the healthy bone.

I now submit some specimens which illustrate the behaviour of the clavicle when broken, as it is called, spontaneously:—"Spontaneous fractures, so called, are such as occur without any apparently adequate cause."* The causes that lead to this kind of fracture, in the skeleton in general, are inflammation, caries and necrosis, tubercle of bone, syphilis, hydatids, primary or secondary cancer, rickets of the child, rickets of the adult, and rickets of the aged.

I can, out of this catagory, show clavicles broken spontaneously in consequence of syphilis, cancer, and each of the varieties of rickets, and I am induced to bring this matter forward just now as I have recently obtained, for the first time, an example of the fracture of the clavicle caused by infantile rickets. I have also, this day, obtained a recent example of the fracture due to the rickets of the aged.

The causes which produce these injuries which are "not obviously adequate to the breaking of a sound bone," are, I think, muscular action, or the strain put on the bone by the

* Ashurst, Cyc. Vol. IV., p. 12. Packard.

weight of the body, or parts of it, in movement. If we look to cases of fracture of the normal clavicle, produced by muscular action, we find the site of the fracture is the middle third in most cases, in the remainder the inner third; it is also recorded that the epiphysis of the sternal end has been separated by muscular action.

These facts have some bearing on the mechanism of these injuries before us. Let us put aside the fractures due to cancer and the similar growths, for in these the fractures occur where the local disease grows. In the examples where the entire structure of the bone is affected, the fracturing force should develop its effect at a place in the bone similar to that of the healthy bone—for the strength of the bone is in all parts equally reduced. In the bones affected by syphilis, in the rickets of the child and of the adult, we see that the fractures are transverse lesions, seated in the middle or inner third of the bone, and we would naturally conclude that they resulted from muscular action alone. Of this specimen of adult rickets I know the history. The bone was broken three times in the same place, not by falls but by sudden exertion of the limb in the effort to catch a child in danger of falling.

In dealing with the fractured clavicle of rickets of childhood we rarely can get an account of the injury, but my experience is, that in this disease, if the clavicle breaks, the injury is in the inner or middle third of the bone, and by its angular deformity we recognise its transverse character. This specimen proves these details—and this cast was taken from an infant in whom both clavicles are so broken.

In the rickets of the aged the clavicle breaks between the conoid and trapezoid ligaments. I put this ghastly-looking skeleton, affected with the disease, before the section as the most graphic illustration of this fracture. I could show many such specimens, and one is this which came into

my hands to-day. On both sides of the skeleton the bone is broken, and one cannot see the relation of the fragments to the coracoid process without at once concluding that the injuries were produced by flexion of the bone over the coracoid, just as one would break a stick across his knee. In the case of the healthy bone we meet the fracture in this position, as the result of a fall or injury, in which the upper region of the shoulder and acromion process bears the shock. It is clear that the mechanism of the fractures is the same.

There is a great importance attached to these facts. In the child with rickets, and its peculiar fracture of the clavicle, the knowledge of the mechanism of the spontaneous fracture sets aside the blame so readily set down to the rough and careless handling of someone who had care of the child. In the rickets of adult life, and of the aged, the fracture of the clavicle is often the first of the long series of fractures that occur, and its presence should warn us to look for and rightly interpret the other symptoms which attend the disease. A knowledge of these facts will, too, render the surgeon very cautious in attaching blame to attendants in asylums for the aged, sane or insane, until the question of spontaneous fracture is set aside by conclusive evidence.

ON THE LIMITATION OF CHRONIC RHEUMATIC ARTHRITIS TO PARTS OF JOINTS.

By E. H. BENNETT, M.D., F.R.C.S.;

Surgeon to Sir P. Dun's Hospital;
Professor of Surgery Trinity College, Dublin.

[Read in the Section of Pathology, November 2, 1894.]

THE specimens which I submit are examples of a remarkable feature to be noticed in certain joints affected by chronic rheumatic arthritis—namely, the strict limitation of the disease to parts of the articular surfaces. I am well aware of the fact that in almost every joint there are particular spots in which the disease, in its ordinary form, shows its effects most—where it starts and attains its greatest development; but, in general, one can trace the effects of the disease over all the joint in some degree. In the examples I now exhibit, while the disease is fully developed in one spot or district of the joint the other parts of the joint appear absolutely healthy, only the opposing surfaces of the limited area are affected; or, as in this example, the scapulo-humeral joint is healthy, but the lesser tuberosity of the humerus, and the tendons in contact with it are affected.

Of this disease in the shoulder I present two examples—the first a dry and macerated humerus, the second a recent specimen which shows all the details of the disease. Without the knowledge supplied by this recent specimen, I am certain many would question my diagnosis of the deformity which the dry bone presents. In it the lesser tuberosity of the humerus looks as if it had been ground down to its base, and the inner limit of the bicipital groove

is gone. The surface of the head of the bone is normal without any feature of chronic rheumatic wearing of the cartilage, or any of the deposits of bone on its margins so familiar in the ordinary forms of the disease.

The recent specimen, which enables us to read correctly the features of the dry one, attracted attention before the dissection of the shoulder, by its deformity. It presented many of the features of an unreduced dislocation of the humerus beneath the coracoid process, for the upper extremity of the bone lay in this position. The acromion process projected strongly, and the deltoid region was flattened. There was not, however, any difficulty in pressing the elbow against the chest wall, and the motions of the joint were much less restricted than in the old unreduced dislocations which I have dissected. I left the diagnosis open, and made the dissection with care to determine the question as to whether the displacement was to be regarded as pathological or traumatic.

I noted the fact that the opposite shoulder was normal, and that the other joints did not appear diseased. I looked in two directions for evidence to determine the question. I dissected the attachment of the sub-scapular muscle, and, cutting it across in the sub-scapular fossa, I reflected the tendon towards the upper end of the humerus. In doing this I found that the capsule of the shoulder had not been ruptured in this position at any time nor the sub-scapular tendon, and that the bursal pouch, which extends out towards the sub-scapular fossa from the joint, was normal. These facts go to prove that the joint had not been the subject of antero-internal traumatic dislocation.

I next dissected the long tendon of the biceps muscle, and found that it had acquired an abnormal attachment to the humerus in the upper part of its groove, and to the capsule of the shoulder, as it does in the ordinary form of

chronic rheumatic arthritis of the shoulder. A part of the tendon in the joint can be traced on the inner surface of the capsule, but not frayed in shreds as in the ordinary disease. These points go far in establishing the diagnosis of pathological dislocation, for in the traumatic the tendon of the biceps is usually intact. Now, when the capsule is raised on the inside of the bicipital groove, we find the sub-scapular tendon in a great measure absorbed, only adherent to the capsule, and the lesser tuberosity absorbed, as in the dry specimen, and its surface presents the appearance of absorption of bone by chronic rheumatic arthritis.

I would now show a couple of specimens from other joints which display this remarkable restriction of chronic rheumatic arthritis, as attested by the destruction of the articular cartilage and the wearing away of the bone, while the adjoining joint surfaces remain quite unaffected. Here is a radius in which the depression for the scaphoid bone is cut clean away, and the bone is deeply grooved and highly polished, while the depression which lodges in the semilunar bone is free from disease, and its cartilage quite normal. In this case I have, unfortunately, got none of the other parts of the wrist, the radius only being preserved.

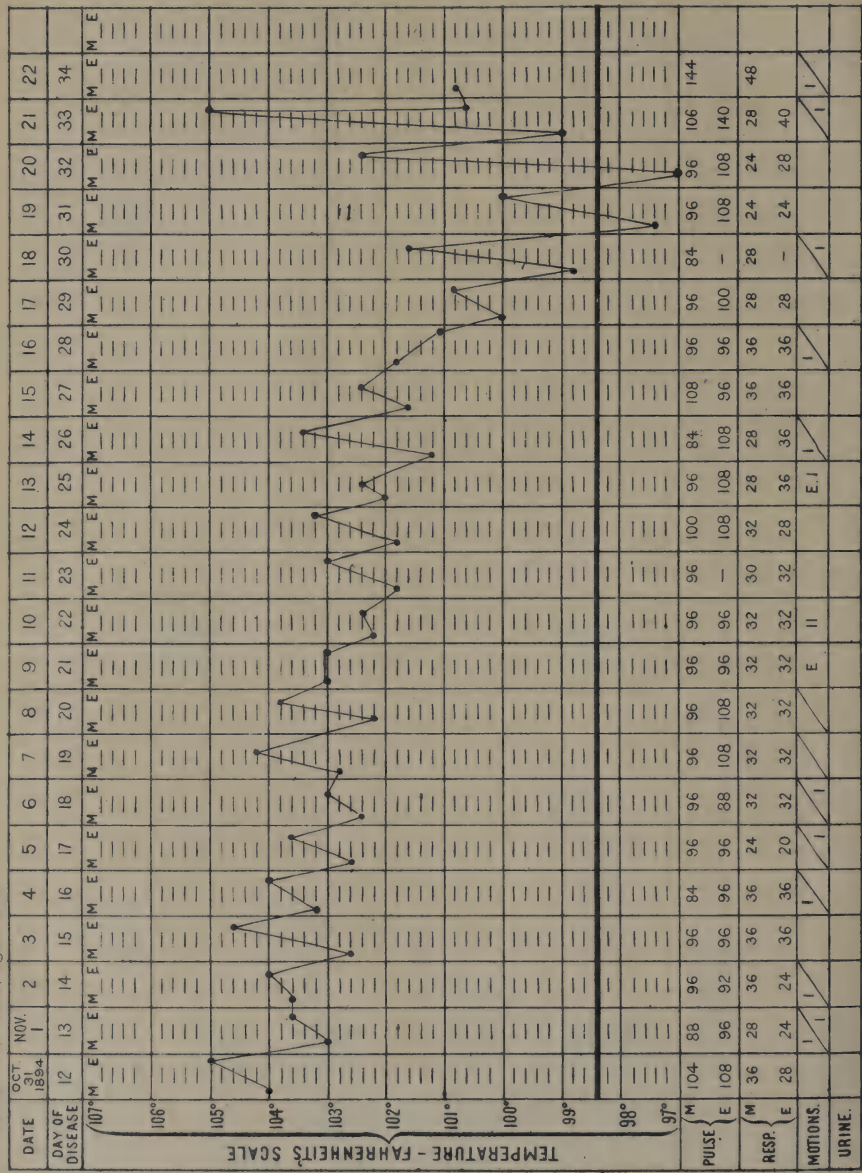
In the skeletons of two hands, which I preserved for another purpose, we find in one the polish of eburnation developed to the full in the articulation between the scaphoid bone and the radius, while the semilunar district of the joint is quite healthy. No other joint of this hand exhibits any rheumatic disease, and in the opposite wrist only the articulation of the pisiform bone with the cruciform and the first metacarpo-carpal joint present any rheumatic changes. In the latter joint they are the result of the damage done to the joint by fracture of the base of the metacarpal bone, and are therefore to be classed as

traumatic. Clearly these examples are not the product of the form of chronic rheumatic arthritis that Professor Adams described under the title "constitutional." I think whatever view we may take of the essential nature of this disease, whether we regard it as the product of a special blood poison, as the name "constitutional" would suggest, or as attributable to nerve influences, or to failure of nutrition or atrophy of the joint structures, or, again, as set up by injury as it probably has been in these examples, we must put aside the idea that suggests itself so readily in examining joints affected by the more common form of the disease—namely, that the tissue primarily affected is the cartilage; that in the changes which are seen in so-called "true velvety degeneration" of the articular cartilage we see the first essential pathological change.

We read in Billroth's lectures the following:—"The disease chiefly affects the cartilage, secondarily the synovial membrane also, as well as the periosteum and bone; in most cases the cartilage is primarily attacked." In the disease as it appears in the shoulder joints which I have presented it occurs where there is no cartilage. I have already published instances of the disease as it occurs in bursæ, which do not contain any cartilage. So that this tissue although very commonly the first seat of the disease, is not an essential for its existence.

The fact that the disease can exist in a restricted part of a joint without causing any damage to the general cavity puts aside the idea that changes in the synovial secretion originate the degeneration of the cartilage. The examples which I have shown are instances of what I might term the most local variety of the disease, which Prof. Adams described thus:—"As a purely local disease it has been frequently found to have originated in accident."

R. McE., male, aged 22.



NOTE ON A CASE OF TYPHOID FEVER, WITH RARE AND RAPIDLY FATAL COMPLICATIONS.

By ALFRED R. PARSONS, M.B. UNIV. DUBL., F.R.C.P. ;
Physician to the City of Dublin Hospital.

[Read in the Section of Pathology, November 30, 1894.]

RICHARD B., aged twenty-two, by occupation a labourer, was admitted to the City of Dublin Hospital, under my care, on the 31st October, 1894, complaining of feeling ill and unable to work. His father and mother were both healthy, and his two sisters and two brothers were also in good health. He himself had never been ill previously. For ten or twelve days previously to admission he had been feeling poorly, and had been troubled with diarrhoea and some slight epistaxis.

On admission, he complained chiefly of headache, vomiting, pains in the back and legs, and general weakness. Physical examination—T. 105° , pulse 104, respirations 28; but nothing abnormal was detected in his lungs or heart. There was no tenderness over the abdomen, no distension, no spots, no enlargement of any organ, and the spleen was not palpable.

He was sponged with cold water, and the temperature fell from 105° , at 7 30 p.m., to 103.2° at 9 15 p.m. His urine was normal, except for a faint trace of albumen.

November 3rd.—Crepitant râles were audible over the front and back of his chest, and he was rather troubled with a cough which, he said, "shook" him very much. There was also some slight distension of the abdomen, and some half-dozen spots of an ill-defined character were visible.

For the first eight days after admission the bowels moved once or twice daily. As a rule, light coloured, formed motions were passed, but about the 21st day of his illness he became rather constipated and an enema was occasionally necessary. He slept tolerably well at night, took two or three pints of milk and a pint of beef tea or cocoa daily; and although the pyrexia was rather severe, its tendency on the whole was downwards, from the time of

his admission to hospital. His pulse, till the day before his death, never exceeded 108, and his respirations varied from 28 to 36.

From the duration of his illness, and the absence of any distinct physical signs, I looked upon the case as one of typhoid fever; though I felt it was typhoid fever only by exclusion, and that, consequently, the diagnosis was not so certain as if based on positive signs.

From the 26th day of his illness the decline of his temperature was still more marked, so that on the morning of the 32nd day his temperature was 97° . On that day he seemed very well and made no complaint at all, except for a little pain in his throat. An examination revealed slight enlargement of his left tonsil, and this, I thought, was quite sufficient to explain the pain. That evening the temperature rose to 102.4° , but fell the following morning to 99° . His abdomen was examined again on the 33rd day of his illness, but nothing abnormal could be detected. His temperature, however, commenced to rise, and about 1 p.m. reached 105° . That evening I had a note from the resident medical pupil, Mr. William Croly, asking me to come round and see the patient at my earliest convenience, as he did not seem so well as in the morning. I went to the hospital about 7.30 and heard that, at 3 p.m., the patient had gone asleep, and awakened, some time after 4 p.m., with difficulty in breathing. His respirations were so loud that they could be heard at a distance of 15 or 20 yards. Dr. Palmer and my resident pupil examined his chest, but could find no pulmonary mischief to account for his dyspnoea. Hot, moist applications were tried, and seemed to give some temporary relief, but, as there was no distinct improvement, I was at once communicated with. On examination there was considerable dyspnoea, distinct laryngeal stridor, sucking in of suprasternal and supraclavicular spaces; distinct, but feeble phonation, a temperature of 100.8° , pulse 140, and respirations 50. He was rather pale, slightly livid about the lips, and sweating slightly on forehead. A hasty laryngoscopic examination, which, needless to say, was made with great difficulty, revealed an enormously swollen and brilliantly red epiglottis, with some yellowish material along its edges. It was manifest that an acute oedema of the glottis had occurred, and that the only way by which relief could be afforded was a tracheotomy. Arrangements were at once made, and the senior surgeon, Mr. Henry Gray Croly, communicated with. Mr. Croly arrived in a few minutes and decided on performing the low operation, so as to get away, as far

as possible, from the laryngeal mischief. The trachea was situated deeply, and considerable venous hæmorrhage took place. On opening the trachea a distinct improvement in the patient's aspect was noticed, but each attempt at inserting the tube seemed to bring on a spasm of coughing. After the tube, on one occasion, had been worn for a few minutes, it was noticed that the tapes had become very tight. Presently the neck was found to be considerably swollen, the face became puffed and tympanitic, the upper part of the trunk showed a similar condition, and in a few hours the emphysema had extended down to Poupart's ligaments. The patient passed a restless night, the pulse became weaker and more frequent, and about 11 a.m. the following day the patient died.

The *post-mortem* examination, which was made twelve hours after death, revealed such extensive swelling of the epiglottis and surrounding structures that the vocal cords, on looking into the larynx, were quite invisible. Along the lateral margins of the epiglottis was a greyish material which did not present the characters of a false membrane, but looked much more like a superficial necrosis, the result of a very acute inflammation. When the parts were sufficiently pressed asunder to allow of a view of the vocal cords, it was found that they were quite normal. The tracheotomy wound was directly in the centre and quite free. The lungs were engorged with blood, and no abnormality was detected in the heart. In the abdomen, the spleen was somewhat enlarged and soft. The intestines seemed normal till within about two feet of the ileo-cæcal valve a small circular ulcer in a Peyer's patch was found. Two other ulcers, a little lower down, the larger of which was immediately above the valve, and about the size of a two-shilling piece, were present, and a few small circular ulcers were found in the large intestine. There was also distinct enlargement and congestion of the mesenteric glands.

The appearances at the autopsy, therefore, confirmed the clinical diagnosis of typhoid fever. The small amount of ulceration and, more especially, the shape of the ulcers, are not without interest. As a rule, typhoid ulcers are oval in shape and have their long axis in the length of the intestine, but, occasionally, they assume the circular form. (See plate accompanying the article on "Abdominal Typhus" in the *Real Encyclopädie der gesammten Heilkunde*.)

The most remarkable feature in this case was the sudden onset of acute laryngeal symptoms. Except slight hoarseness,

most probably the result of a little catarrh, laryngeal complications in these countries are exceedingly rare. Murchison, with his enormous experience, met only three or four cases of ulceration of the larynx in typhoid fever, while on the Continent, Hoffmann states, it is present in 28 out of 250 cases. Zuelzer observed it in more than 20 per cent. of the fatal cases, and Griesinger found it present in 31 out of 118 autopsies. The condition has been described as perichondritis typhosa by Rokitansky. Lüning states that œdema was present in 9 out of 115 autopsies of enteric fever cases, in which there were serious laryngeal complications. With regard to the cause of these ulcers, different views have been held by various authors. Dr. Watson Williams succeeded in isolating the bacillus typhosus from one of these ulcers, and consequently believes that these lesions are to be looked upon as specific typhoid ulcers. This view has also been held by Rokitansky and Mackenzie, while Hilton Fagge and Murchison considered them rather as secondary lesions. Unfortunately, in this case, no cultures were made from the laryngeal ulcers, and, consequently, no conclusive evidence can be deduced as to their nature; but, so far as a microscopic examination of the diseased parts is of any weight, it goes to support the latter view, inasmuch as the sections present enormous numbers of micrococci.

The occurrence of emphysema is, I think, to be looked upon as one of those rare complications of a tracheotomy, the explanation of which is obscure; but, at the same time, it must be borne in mind that, in a few cases of typhoid fever, emphysema has occurred in which no tracheotomy was performed. It was Dr. Wilks who first satisfactorily explained this very rare condition, by pointing out an ulcer on the posterior part of the trachea, through which the air escaped into the tissues. It is, therefore, conceivable that the emphysema may, in this case, have happened quite independently of the operation.

DR. DAWSON said that in his experience laryngeal complications in typhoid fever were not very rare. There was often a certain amount of sore throat. Ulcerations of two different types had been regarded as probable—one a diphtheritic ulceration, and the other, although this had not been conclusively proved, due to the typhoid bacillus. Its existence in the blood and its power of causing ulceration in the intestine was evident, and it was easy to imagine that it could cause ulceration elsewhere. The present case he did not think to be one of diphtheritic ulceration, judging from the sections of tissue removed from the larynx.

DR. J. W. MOORE, having inspected the ulcers present in the small intestine, said that as far as he could judge they were ulcers of typhoid fever, from which the sloughs had come away. He said he considered that sometimes portions of the system other than the intestines—as, for instance, the lungs—bore the brunt of the disease.

MR. CROLY, who had performed tracheotomy on the patient, said that never before in his experience had he met with a case of typhoid fever presenting this severe laryngeal complication, and, moreover, he had never been troubled with emphysema as a sequel to any tracheotomy he had previously done. In the performing of the operation he emphasised the importance of opening the trachea as soon as possible to check venous bleeding; of cutting a piece out of the trachea, not merely making a slit in it; and of scraping away the deep layer of the cervical fascia, lest it should form a sort of valve over the opening in the trachea, by the opening in the fascia not remaining exactly over the opening in the trachea. He had heard of a case in which this fact led to the death of the patient. He said he was unable to explain the occurrence of the emphysema. There was nothing peculiar in this case previously except that the trachea was very deep.

DR. HAWTREY BENSON said that during his 27 years' experience in Baggot-street Hospital he had never met with a similar case.

DR. PARSONS, in replying, stated that Dr. Bewley had drawn his attention to a statement in Eulenberg's *Encyclopædia of Practical Medicine*, where it was alleged that twenty per cent. of the cases of typhoid which die had ulceration of the larynx. In a few cases extensive emphysema had been observed.

ACROMEGALY, WITH OCULAR COMPLICATIONS.

By ARTHUR BENSON, M.A., UNIV. DUB., F.R.C.S. ;

Ophthalmic and Aural Surgeon to the City of Dublin Hospital ;

Junior Surgeon to St. Mark's Ophthalmic Hospital.

[Read in the Section of Pathology, November 30, 1894.]

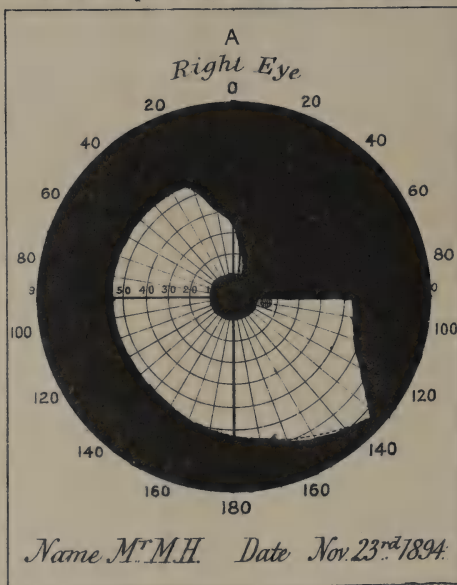
ACROMEGALY is a disease which, of recent years, has attracted a good deal of attention, and yet about which very little is definitely known. I thought that the notes of a case which I had under observation might not be without some interest to this Section, as such cases are of equal interest to the ophthalmologist, the physician, and the pathologist; and each case carefully noted may assist the statistician in arriving at general conclusions :—

CASE.—M. C. H., aged thirty-eight ; bachelor ; farmer.

History.—Father died at the age of eighty; mother died at the age of fifty-five. Both had been strong, healthy people, and died from acute diseases. The patient has two brothers younger than himself, and one sister, older; one sister died at the age of twenty from “cold caught at school.” The living members of family are all strong and healthy. His father was always a big, bony man, and his brothers also are big, strong, bony men, but light and active, not stout like the patient. He used to weigh twelve stone at his best. Twelve years ago, in 1883, he hurt his left knee and leg by the fall of a cart of oats. This prevented him from taking his usual exercise for a long time. He used to ride a great deal and hunt, but since 1883 he had to stop hunting, and gradually got very much heavier than before. His general health, however, seemed good, but he got a bit “lazier in himself,” and slept at odd times during the day more than before, and also at night he slept very well. His appetite was good, and all the functions of the body were regularly performed. He never suffered from headache,

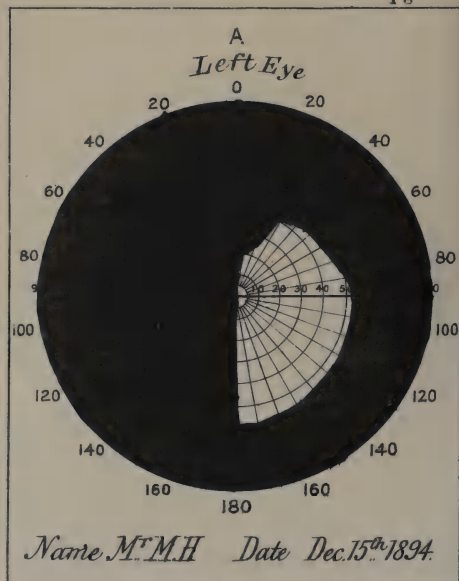
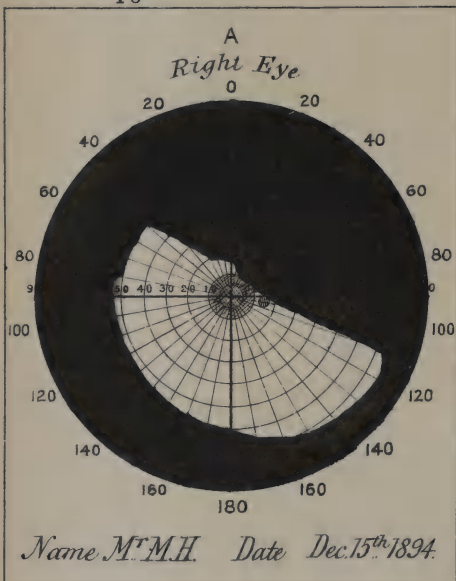
R. V. = $\frac{1}{36}$.

L. V. = p. 1.; no field could be taken.



R. V. = $\frac{6}{18}$??

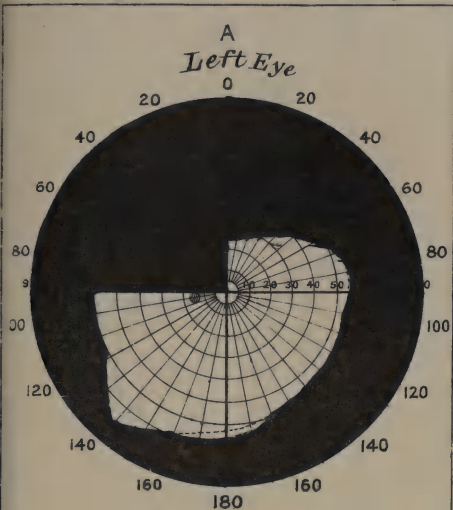
L. V. = $\frac{6}{18}$??



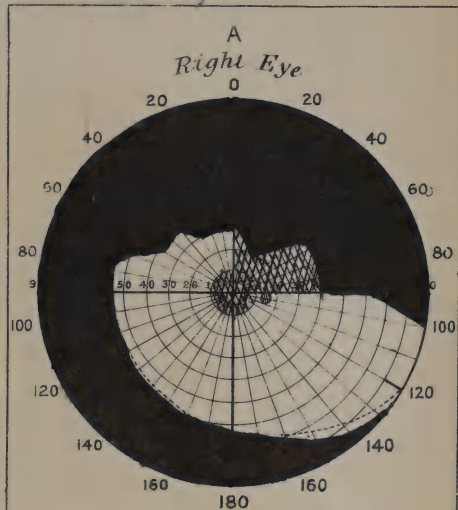
R. V. = $\frac{6}{6}$???

L. V. = $\frac{6}{6}$???

R. V. = $\frac{6}{6}$???



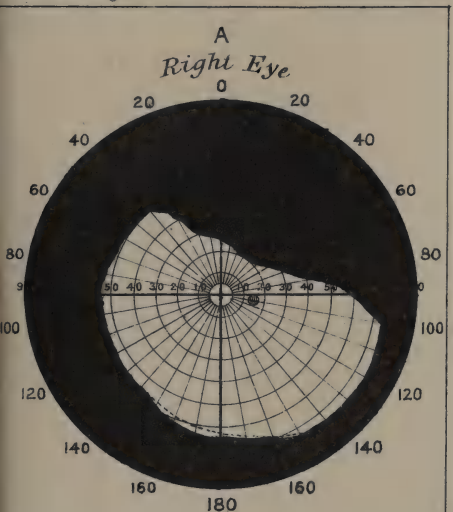
Name *M^rM.H* Date *Jan^y 22nd 1895.*



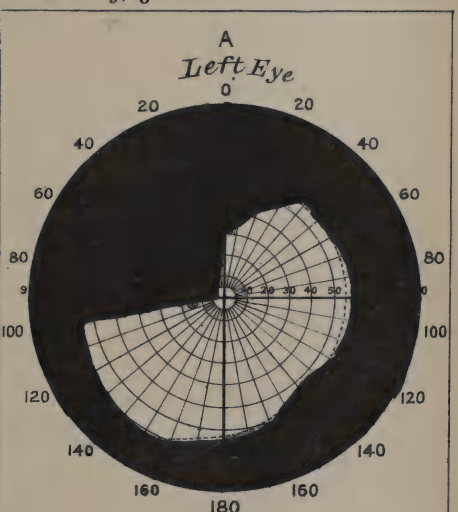
Name *M^rM.H* Date *Jan^y 23rd 1895.*

R. V. = $\frac{6}{6}$

L. V. = $\frac{9}{9}, \frac{6}{6}$???



Name *M^rM.H* Date *March 29th 1895*



Name *M^rM.H* Date *March 29th 1895*

but now and again had a sort of feeling as of blood in the head. He never had pain in the eyes.

In January, 1892, he had an attack of influenza, not severe. After this he began to find that he required more light to enable him to see clearly at night.

On June 8th, 1892, he consulted me on account of a failure of sight in both eyes, because he found difficulty in counting cattle in the field, &c. He would count them differently each time and could never feel sure that he was right. He then stated that the defective sight was first noticed about two or three years before, but that it had got worse for the last six or eight months. He smoked two or three ounces of twist tobacco in the week. His vision was $\frac{6}{60}$ in each eye, with an almost total central scotoma for colour, and defective colour sense over the whole of the temporal half of each field of vision, the defect in the left eye being decidedly greater than in the right eye. The colour vision of the nasal halves was fairly perfect. When first seen the central vision was only $\frac{6}{60}$ and peripheral vision $\frac{1}{18}$. After three weeks' use of iodide of potassium and cessation from smoking, the central vision improved to $\frac{6}{6}$. There were perivascular white lines (thickening of tunica adventitia) along both veins and arteries on the disc, and for a short distance on the retina, otherwise the fundus seemed normal unless for a doubtful paleness of the disc. He was then a large, heavy man, but I regarded him as a naturally big, heavy man, and made the diagnosis of toxic amblyopia, advised the stopping of tobacco, and he was to come back in a few weeks, which he did, as above stated, with almost perfect vision. He returned home, promising to abstain from smoking and return in a few months' time to report progress. I regret that through stress of circumstances no chart of the field was made at this time.

The next time that I saw him was on November 17th, 1894, *i.e.*, after an interval of two years and five months. He stated then that he had had perfect health and sight from the time that I saw him before till about two months ago; since then the sight had rapidly failed. He had taken to smoking again, and partly blamed that for his trouble—that is to say, that for two years and three months, while he had abstained from smoking, he had enjoyed “perfect sight” according to his own estimate. He was now a different-looking man; his face and hands in particular struck me, and his figure was bent, and he seemed to require a stick to steady

himself with. There was no abnormality discoverable in thyroid or thymus gland.

His face and head had grown large and heavy-looking. His nose was large, his under-jaw prognathous, and the ramus long, and the mouth heavy-looking. The eyelids were puffy, and the eyes prominent, with slight strabismus. The ears were very large, especially the left one. His hands were large and "spade-shaped," and the fingers round and sausage-like. His feet, also, were most remarkable-looking, and the joints of ankles, wrists, and elbows, were very massive. His pose was quite characteristic. The back and shoulders were stooped, and the prominent chin almost touched his chest. His speech was rather slow, but his intelligence seemed quite unimpaired.

He complained of little except what he called a "dumb pain" in the arms and legs; he had but little strength in legs and hands, and his grasp was very feeble for such a giant fist and arm. He was not sensitive to pain, and complained of feeling "dull in himself."

As a young man, hunting, he found it hard to get gloves large enough to fit him, and since then his hands have grown very much larger, and he has in every way increased in size. He used to be known as a strong, active man, and very handsome. The change in the shape of his mouth is what most attracted his friends' attention.

His cranium has increased slightly. He used to wear a hat $6\frac{7}{8}$; now he wears $7\frac{1}{8}$. He has had to get his boots made larger, and his legs have numerous large varicose veins, and he has the characteristic stoop of the shoulders. He is more disposed to sleep than formerly, and his appetite is excessive. He has no feeling of thirst, nor does he drink any fluid in excess.

His general health seems to be perfect, and he is free from every other organic lesion. His urine is free from albumen and sugar and indican, but rich in urates and uric acid crystals.

The vision in each eye had again fallen to $\frac{5}{60}$; the right eye being the better of the two. The discs were very similar in appearance to what they were in 1892, but more definitely atrophic, though the perivascular thickening was not increased.

November 20th, 1894.—In consultation with Dr. Hawtrey Benson, it was decided to put him on thyroid extract, one tabloid each day to begin with, and it was suggested that possibly pituitary extract might be of use.



MR ARTHUR BENSON ON ACROMEGALY.

The next day the patient came to tell me that he found the left eye was quite blind. On testing him this was found to be the case—L. V. = bare perception of light. But there was no change in the ophthalmoscopic appearances.

In consequence of this sudden loss of sight in the left eye, I asked my colleague, Dr. Story, to see him in consultation, and he agreed in the diagnosis of acromegaly, but advised to put him back for a time on the iodide of potassium mixture, which had done him, apparently, so much good in 1892. Subsequently I had the advantage of consultation with Dr. Fitzgerald and Mr. Swanzy.

The right field of vision shows a remarkable configuration. There is a total central scotoma, combined with a semi-hemianopsia of the superior temporal quadrant of the field, the inferior temporal quadrant being the most perceptive position of the whole field for white, though every part of the field has now lost its perception of red and green.

The actual size of the hands can be judged from the accompanying measurements, which I took, and his feet were very similarly enlarged. His feet are terribly squeezed by his boots, but he says he "doesn't easily feel pain," and his feet never bother him when once he has "crushed them into his boots." His teeth were, at the same time, examined by Dr. Arthur Baker, and a cast taken, which I am, through his kindness, enabled to show.

Measurements of Hands, &c.

		RIGHT.		LEFT.
Circumference of wrist -	-	9½ inches	...	9 inches
Do. palm -	-	12 "	...	12 "
Do. thumb	-	4 "	...	4 "
Do. first finger	-	4 "	...	4 "
Do. second finger		4 "	...	4 "
Do. third finger	-	3¾ "	...	3¾ "
Do. fourth finger		3½ "	...	3½ "

Circumference of neck, 18 inches.

Do. of head from chin over vertex, 29 inches.

Length of right ear, 3¾ inches.

Do. left ear, 3¼ inches.

Distance between centres of pupils, 76 mm.

On March 17th, 1893, he weighed 17st. 0½lb., and he weighed 17st. 4lbs. on November 29th, 1894; and his brother thinks he is not now as big as he was a year ago. He says himself that, but

for his eyes, he is as good a man as ever he was in his life, and is in perfect health and spirits.

The left eye is almost totally blind, and the sight of the right eye has diminished to fingers at 1 metre. He has to be led about, and supports himself on a stick; but his naturally cheerful disposition prevents him from desponding.

December 1st, 1894.—Right V. = fingers at 0·50m. Left V. = doubtful perception of light. The pupils hardly act to light or accommodation. There is slight divergent strabismus, and the eyes are proptosed a little, and the lids very full and flabby. The ears are very large, especially the right one, which measures $3\frac{3}{4}$ inches in length.

He has been taking tabloids of thyroid extract (Burroughs, Wellcome & Co.), two each day, between meals, and, though they do not seem in any way to disagree with him, his sight is steadily and rapidly deteriorating since he began using the tabloids. On the suggestion of Dr. James Little, I stopped the tabloids and put him on fresh thyroid extract, 25 minims three times a week, prepared and sent weekly to him by Messrs. Brady & Martin, Newcastle-on-Tyne.

A fortnight later, December 15th, 1894, his sight had improved in each eye up to $\frac{6}{18}$??? And on January 22nd, 1895, sight was almost perfect again—in each eye it was $\frac{6}{6}$??? and Jä. 1.

Thus, within seven weeks, the sight of the right eye improved from fingers at 0·5m. to $\frac{6}{6}$???, and the sight of the left eye from doubtful perception of light to $\frac{6}{6}$??? and Jä. 1. And this improvement seems to date from the taking of the fresh extract, as he was getting steadily worse all the time that he was taking the tabloids.

There is still a defect in the upper temporal quadrant of the field in each eye. And an attempt was made on more than one occasion to demonstrate Wernicke's hemianopic pupil reaction, but with only uncertain results.

Two months later, March 29th, 1895, I again saw him. He said that he felt "awfully well," but that his left leg had a sort of soreness in the hip muscles below and in front of the joint; that leg, he said, had for years been "a sort of a wooden leg" on him. His appetite was splendid, and the head, he said, was "wonderfully light" and free from the "full sensation" which he felt before.

All through, his grasp had been very weak, especially in the left hand. He considers that his whole left side is weaker than his right.

On November 29th, 1894, he weighed (naked) 17st. 4lbs. On March 29th, 1895, he weighed 16st. 1lb. A loss in four months of 1st. 3lbs.

His sight still remains almost perfect—R. V. = $\frac{6}{6}$ slowly. L. V. = $\frac{6}{6}$?????. The discs are much as before—paler than normal, with evidences of past perivasculitis.

Since writing the above I received a letter from the patient's brother, which says—"I have to tell you of the death of my brother, Michael, which occurred on the 25th April. He continued to go on very well under your treatment until he got rheumatic fever, which terminated fatally at the end of a week."

Dr. Crean, of Clonmel, who attended him in his last illness, kindly gave me the following information, he writes—"I believe that influenza was the cause of Michael H——'s death. For some months before his last illness he had been making rapid progress. He recovered his sight; was no longer drowsy or apathetic, and attended his ordinary business with an unusual amount of energy. His face was not so swollen and expressionless, and the oedema (mucoid) of his extremities was decreasing day by day. In his case the thyroid extract treatment appeared to work wonders. The 18th of April he went to the Tipperary Hunt Races in fair health and good spirits, and was seized, on his return, with a severe rigor, followed by high fever, pains in the limbs, and all the other usual symptoms of influenza. The day before his death he was clear and collected. The fatal termination, in my opinion, was in no measure due to tumour of the pituitary body."

The pathology of acromegaly seems still a matter of some doubt, but in a very large majority of cases the pituitary body has been, on *post mortem* examination, found to be enlarged, and its pressure on the chiasma accounts for the ocular complications. The few cases where the

pituitary body has been found apparently healthy may, perhaps, be explained otherwise.

If the enlargement of the pituitary body be a true hypertrophy, as in the case of many enlargements of the thyroid gland, then it would seem irrational to add further to the already excessive pituitary secretion; but if the enlargement be due to some disease of the gland which destroys its function, then it would seem rational to supplement the fluid which was insufficiently supplied to the organism by pituitary extract obtained from other animals. So far, there are few recorded cases where pituitary extract has been used, and, as far as I know, none where its use gave anything like the same amount of benefit that fresh thyroid extract gave to my case.

Into the literature of the subject I need not enter. My desire being to record a case rather than to exhaust the subject.

The principal points of interest in the case seem to me to be—

(1.) The early appearance of a *central scotoma* for colours, and probably also hemianopia for colour.

(2.) The almost complete *recovery of vision* which followed the use of iodide of potassium and the cessation of tobacco.

(3.) The *return of visual troubles* (after more than two years) when the use of tobacco was resumed.

(4.) The rapid *deterioration of vision*, which occurred when the thyroid tabloids were first used.

(5.) The rapid and continued *improvement* which followed the use of the fresh thyroid extract.

(6.) And the many and peculiar changes which have occurred in the visual field.

ACROMEGALY.

Chart of Vision of MICHAEL H—.

Date	Right Vision	Left Vision
1892		
June 8th -	$\frac{6}{60}$ (central), $\frac{6}{18}$ (peripheral)	$\frac{6}{60}$ (central), $\frac{6}{18}$ (peripheral)
„ 29th -	$\frac{6}{6}$	$\frac{6}{6}$
1894		
Nov. 17th -	$\frac{5}{60}$	$\frac{5}{60}$
„ 21st -	$\frac{5}{60}$	Perception of light [fectly] (imper-
„ 26th -	$\frac{1}{36}$	„ „ (badly)
„ 30th -	Fingers at 1 metre	„ „ (badly)
Dec. 1st -	Fingers at 0.50 ^m .	„ „ (doubtful)
„ 15th -	$\frac{6}{18}??$	$\frac{6}{18}??$
1895		
Jan. 22nd -	$\frac{6}{6}??? J\ddot{a} 1$	$\frac{6}{6}??? J\ddot{a} 1$
March 29th -	$\frac{6}{6}$ slowly	$\frac{6}{6}????$

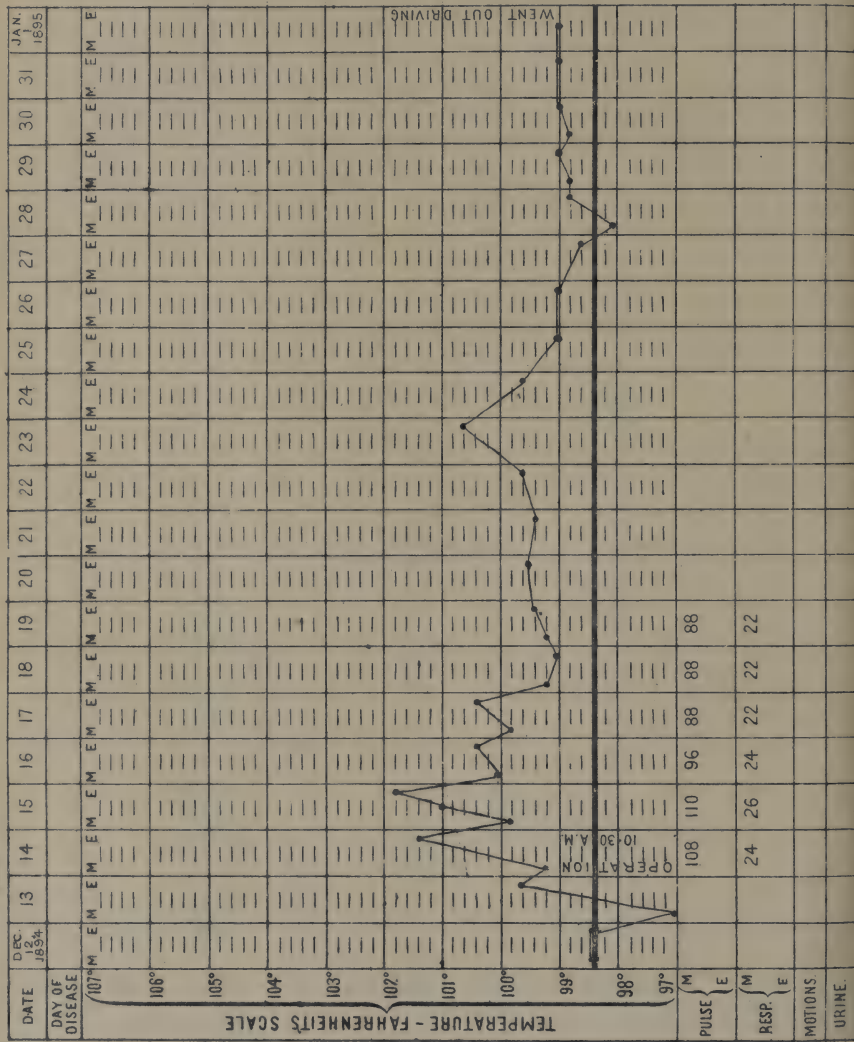
DR. BAKER exhibited a cast of the patient's mouth.

MR. SWANZY expressed the gratitude the Section owed to Mr. Benson for the exhibition of this most interesting case. He concurred as to the diagnosis and treatment of the disease. Hemi-anopia was one of the most constant ocular symptoms of this disease. It existed in this case first as colour blindness of the temporal side of each field, and afterwards as partial blindness of the temporal side of each field. Central scotoma was not a usual symptom, but it is very probable that this was due to a toxic amblyopia caused by excessive tobacco smoking, and had nothing to do with the acromegaly. Dr. Cunningham had endeavoured to show that the skeleton of M'Grath in Trinity College, Dublin, was that of a patient suffering from this disease. The pituitary fossa was so large that you could easily put a walnut into it. Neighbouring bony structures were obliterated, and we must suppose that the optic tracts and some of the ocular nerves were pressed upon. It is very probable that his right eye was com-

pletely blind, and that the left half of the left visual field was also a blank. It is, moreover, very curious that in any account we have of the giant no mention is made of any defect of sight, so the above conclusions must be more or less speculative.

MR. BENSON said he wished to state, in conclusion, that he had the patient photographed in various postures. The peculiar stoop, the large size of the thorax, and the small size of the buttocks as compared with the legs were well shown.

T. O., male, aged 32.



A CASE OF NEPHRO-LITHOTOMY.

By C. YELVERTON PEARSON, M.D., F.R.C.S. ENG.;

Surgeon to the City of Cork Hospital, &c.

[Read in the Section of Pathology, February 8, 1894.]

T. O., male, now aged thirty-two, single, a country shop-keeper who is fond of angling, first came under my observation Nov. 12, 1892; is tall, slight, black hair, with very sallow and anæmic appearance. Good family history; healthy up to time of onset of present ailment.

Ailing, about eight years off and on, with pain of an irregular character, referred to about midway between umbilicus and cartilages of false ribs on left side. There is slight pain and tenderness in left loin, which is increased by making pressure over region of left kidney. Says he is only conscious of pain in lumbar region when the attacks of pain come on in front, and always refers most of his pain to the latter situation. Has never had pain in either groins, testicles, or right lumbar region; does not get nausea or vomiting with the attacks of pain. Has no irritability of bladder; never passed blood.

Urine cloudy, faintly acid; not offensive; specific gravity, 1014. Has a large amount of albumin; pus corpuscles in large numbers; no casts or crystalline deposits. Diagnosis doubtful between renal calculus and serofulous pyelitis,—most probably former, as no indication of tubercular disease elsewhere.^a

He remained under my treatment and observation, and was treated by tonics to improve his general health; sedatives to relieve pain; and remedies to improve the condition of his urine, with more or less benefit. As his general condition improved he was free from pain for considerable periods, and

^a I take the early portion of the notes of his case from private case-book.

the urine got almost clear and less albuminous, but was always slightly cloudy and was never free from pus corpuscles. He never felt quite well, and was always in rather low spirits, but was, on the whole, feeling much better up to last September, when the pain became more severe, the urine got very clouded, and contained a large amount of pus. He also lost his appetite. Oct. 31st, was feeling very poorly; no desire for food; is rapidly losing flesh; pain more frequent and severe.

During the above period I had formed a definite opinion that the patient had renal calculus, which, owing to the absence of testicular pain and hæmaturia, I believed to be more or less encysted. As the symptoms were becoming urgent, I suggested an operation, to which the patient consented. He was admitted to the North Charitable Infirmary, Dec. 12th, 1894. I operated on Dec. 15th, 1894, by the lumbar incision, as recommended by Mr. Henry Morris.

The kidney was reached without difficulty, but was unusually high up—its lower end being nearly on a level with the upper part of the lumbar incision, which extended to the 12th rib. It was very mobile, moving very freely up and down with the respiratory action of the diaphragm. Owing to the extent to which it was overhung by the cartilages of the lower ribs, it was impossible to steady it in the usual manner by making pressure on the anterior abdominal wall, and I found it necessary to seize the lower end with the finger and thumb of the left hand in order to do so.

I then explored the posterior surface without detecting anything abnormal. On inspecting the anterior aspect, the organ, which was well drawn into view, seemed half again as large as an ordinary kidney. A well-marked dimple or puckered depression was apparent a little below the centre of the anterior surface, and between this depression and the hilum, at the junction of the middle with the inner third,

a hard calculus was distinctly perceptible to the finger. Steadying the kidney with the left hand, I inserted a scalpel at the posterior and outer aspect of the organ, and drove the point straight in towards the calculus until I struck it. I then withdrew the knife, enlarged the incision, at first with the nail and then with the pulp of the index finger, till I reached the stone, which I enucleated with the finger, aided slightly by the traction of a small forceps.

The hæmorrhage was arrested by inserting a small sponge temporarily. A drainage tube was fixed, extending almost to the wound in the kidney, but not entering it. This was surrounded by some packing consisting of strips of double cyanide gauze, the ends of which were brought outside the wound. The greater part of the wound in front and behind the drainage tube was closed with some deep sutures of silk-worm gut.

The entire operation occupied twenty-five minutes. The patient suffered from severe shock for a short time after, but soon had fair reaction, and his subsequent progress has been very satisfactory, as the temperature chart which I show will fairly indicate.

A moderate amount of blood appeared in the urine for the first forty-eight hours. Very little urine passed through the drainage tube until the third day, when it became profuse. I believe this was due to the formation of a clot in the rent in the kidney, which was subsequently washed away by the urine.

The urine passed from the bladder rapidly improved in appearance, and by the end of the second week was quite free from albumin, and pus could only be detected by the aid of the microscope. He was practically free from pain after the second day, and was in excellent spirits. He was up on Dec. 26th, and went out for a drive on Jan. 1st. He still wears a short rubber drainage tube, but the quantity of

urine coming through it is steadily diminishing, and scarcely any comes except when he lies on the left side. He returned home to-day (Feb. 7th), feeling in better health and spirits than he has done for years. I examined a specimen of his urine passed to-day; it is almost clear; acid; specific gravity, 1020; no albumin.

The stone which I now show you is a beautiful specimen of branched oxalate of lime calculus, very hard, rough over the entire surface, the greater part of which is studded with well-formed crystals of ammonio-magnesian phosphate. On one side a piece of organised membrane is adherent, which shows that the calculus was partially encysted. The stone, with the portion of membrane attached, weighs exactly 200 grs.

The points which in this case are to my mind worthy of special attention, are as follow:—

1. The length of time during which the patient was able to continue his ordinary occupation.
2. The absence of very severe symptoms during most of this period.
3. The situation of the pain, which was referred at first altogether to the anterior aspect of the abdomen, and was always more severe in this situation than in the loin.
4. The somewhat paroxysmal character of the pain, notwithstanding that the stone must have been practically fixed.
5. The absence of pain in the groin and testicle.
6. The absence of vesical irritation.
7. The absence of hæmaturia throughout; and
8. The size and character of the stone itself.

DR. ROCHE wished to know what were the points which would help to make the diagnosis between stone and tubercular pyelitis. He had a patient six months ago who had a paroxysmal attack of pain running down to the thigh, with partial suppression of the

urine. There was no stone in the bladder. She subsequently suffered from frequent attacks, and after a time continually passed a large quantity of pus in the urine but no blood. She had frequent micturition. The diagnosis was between stone in the kidney or tubercular pyelitis. Dr. Little, who saw the case, thought it was the latter. The patient went to London and underwent an operation, when it was found that it was a case of tubercular pyelitis affecting both kidneys.

DR. BENNETT said that the diagnosis could be made by making a microscopic examination for the tubercle bacillus. With regard to the structure of the stone, he differed from Dr. Pearson, and thought it consisted of crystals of ammonio-magnesian phosphate. He remembered seeing a case in which there were no symptoms whatever of calculus, but *post mortem* a large branched crystalline calculus was found. It was pure ammonio-magnesian phosphate. The other kidney had lithate of sodium along the uriniferous tubes as in gout.

DR. ROCHE stated that he had had the urine twice examined for tubercle by Dr. M'Weeney, but that none were found.

DR. TWEEDY said he had had a parallel case to that of Dr. Bennett. There was no clinical history whatever. The stone was found only *post mortem*.

DR. PARSONS fully agreed with Dr. Bennett as to the way of making the diagnosis between tubercular kidney and stone. If not found at first the urine should be frequently examined for tubercle bacilli.

DR. PEARSON, replying, said he attached great importance to the presence or absence of tubercle bacilli in making a diagnosis. He thought it was very rare, however, to have tubercular disease of the kidney without having it also in the genital organs. He would examine the epididymis carefully on both sides, and thought it would be a curiosity if it was not found diseased when tubercular disease of the kidney was present. Also presence of tubercular deposit in the seminal vesicles could be detected by the finger in the rectum. In this case the kidney was abnormally high up, and it might account for the pain being referred to a point immediately below the cartilages in front. The objection to making a lumbar as against an abdominal incision was, that the opposite kidney could not be explored. In this case, however, as there was such pain in the left loin for a few weeks before the operation, he was sure it was the left kidney in which the stone was.

SYMMETRICAL GANGRENE OF THE EARS.

By H. C. TWEEDY, M.D., F.R.C.P.;

Physician to Madam Steevens' Hospital.

[Read in the Section of Pathology, March 8th, 1895.]

THE heart and lungs of the case now described were taken from a man (T. D.), aged thirty-five, who was a patient in Madam Steevens' Hospital, having been sent to me by the kindness of Surgeon-Major Daly of the Army Medical Staff.

The man was first admitted to hospital, as a supposed case of Raynaud's symmetrical gangrene, affecting the ears. He stated that about nineteen months previously (in the early autumn of 1893) he first noticed a small black spot on the right ear, at the upper margin of the helix. This increased in size gradually, till it ultimately became an elongated, hard, black slough, about an inch and a quarter in length, and a quarter of an inch in depth, separated from the rest of the ear by a sharp and clearly-defined line of demarcation. Three months after the appearance of this gangrenous spot, two similar spots appeared on the opposite ear. These also continued to extend, and finally coalesced, forming a patch on the upper part of the left ear, similar in appearance and in size to that on the right. There was at first no pain—no pain to speak of—save what he described as a kind of stinging, as if from cold; but latterly, as the sloughs became very hard, he naturally felt pain if he lay upon either ear and, consequently, he invariably slept upon his back.

There was no history of any previous illness, save that of a tolerably persistent winter cough; but, on looking at the man, the first thing that struck one was the cyanosed appearance of the face, neck and chest. There was an irregular fluttering pulsation in the veins of the neck. Respiration

was rapid and laboured. The patient suffered much from cough and dyspnœa, and moist râles could be heard over the front and back. The heart's apex beat was not visible, but it could be felt faintly a little below the normal position, but diffused and very irregular in character. The heart sounds were both feeble and irregular, and a systolic murmur could be heard at the apex, faint in character and rather tending to increase in intensity towards the sternum.

The liver was enlarged and somewhat tender. The urine was scanty, loaded with urates and albuminous. There was no dropsy of the extremities. His death occurred suddenly and unexpectedly.

A rapid *post mortem* was made, under considerable difficulties, thirty hours after death. Each pleura contained about a pint of serum. The lungs were much congested, and a recent infarct of considerable size was found in the upper lobe of the left lung; a small infarct, also recent, was found in the left lung.

The heart was greatly hypertrophied (both left and right ventricles). The mitral orifice was narrowed and surrounded by vegetations, and the valves were thickened and rigid; the aortic valves were healthy, but the aorta itself was distinctly atheromatous and there were also atheromatous nodules surrounding the tricuspid valve. The liver was enlarged and congested; the left kidney was also enlarged and showed numerous cysts on section.

The diagnosis made during life of an incompetent mitral valve with hypertrophy of the left ventricle, dilatation of the right ventricle, tricuspid regurgitation and general venous congestion, was thus confirmed. This, with the atheromatous condition of the vessels, may also account intelligibly for the gangrenous state of the ears, without hazarding the diagnosis that the case was one of Raynaud's disease—an assumption which seems improbable for the following reasons :—

1. The absence of typical paroxysmal pain.
2. The absence of any markedly defective circulation in the hands or feet.
3. The absence of vesicles, bullæ, or ulceration in the parts affected.
4. The steady continuity of the morbid process, there having been apparently no successive attacks with intervals between them.
5. The age and sex of the patient.

There had been no history of rheumatism or syphilis, which leads to the conclusion that the condition of the heart may have been secondary to the morbid process going on in the kidney.

I am indebted to my friend, Dr. Wallace Beatty, for an excellent photograph of this case, which is here reproduced, and shows the condition of the ears with great clearness.

DR. MCWEENEY asked whether the patient had any pain. He thought it might possibly be a case of Morvan's Panaritium Analgesicum, and would like to know if the brain or spinal cord had been examined.

DR. DALY said that he had been the cause of bringing this case forward. The man was very much worse in cold weather. He had seen his hands wrinkled with cold. He had showed the case to many within the last 18 months, all of whom had diagnosed Raynaud's disease. He was at the Richmond and Adelaide Hospitals, and had no heart murmur then. When the disease commenced it was symmetrical. He suffered intense pain. Never had syphilis. He was 12 years in the army, 4 being spent in Ceylon. He was a strong, apparently healthy man.

DR. BENNETT stated that the gangrene had commenced in the early autumn when there was not much cold.

DR. WOODS saw the case at the Richmond Hospital a year and a half ago. He had seen three other cases of Raynaud's disease, all of which were men, but this was the most pronounced. He had examined the man's heart and had found a mitral systolic



murmur. He believed it was a case of Raynaud's disease, the symptoms of which were aggravated by heart disease. He recommended him to wear ear caps over his ears. As well as he remembered the right ear was worse than the left.

DR. PARSONS wished to know where the man was when it occurred. He thought the *post-mortem* had not done much to clear up the case. He did not understand how the circulation in his ears was so bad as to cause gangrene in spring and summer, for there appeared not to be any dropsy of the extremities, which was one of the first signs of cardiac failure. He wished to know if the urine had been examined for methæmoglobin, which has been found present in cases of Raynaud's disease.

DR. DALY said that the disease commenced in the spring, one year and eight months ago. The patient was living in Dublin at the time. He never suffered from chilblains. When he examined the urine there was no albumen in it. The man worked inside a store and was not exposed to the cold.

DR. TWEEDY, replying, said that the *post-mortem* was made rapidly and under great difficulties, and was thus necessarily incomplete. He had been unable to get a portion of the ear for the purpose of making sections. The brain and spinal cord had not been examined. There was no definite pain till the hard masses of slough formed, and then caused him pain to lie on it. He still thought the cardiac disease, and the atheromatous state of the vessels, sufficient to cause the condition of his ears. It could not have been a frost bite, as the disease commenced in the early autumn. The heart trouble must have been pretty chronic from the *post-mortem* appearances. He had only seen one case of Raynaud's disease. It was in a child, and the little toes were gangrenous, and in addition there were vesicles and bullæ present. The child had also paroxysmal pain, and the hands and feet were very cold. He had not examined the urine for methæmoglobin, as the man had only been a short time in hospital and had died suddenly before an opportunity occurred for carrying out the intended examination.

A CASE OF SARCOMA OF THE FEMALE URETHRA.

By E. J. McWEENEY, M.A., M.D.;

Pathologist to the Mater Misericordiæ Hospital.

[Read in the Section of Pathology, March 8, 1895.]

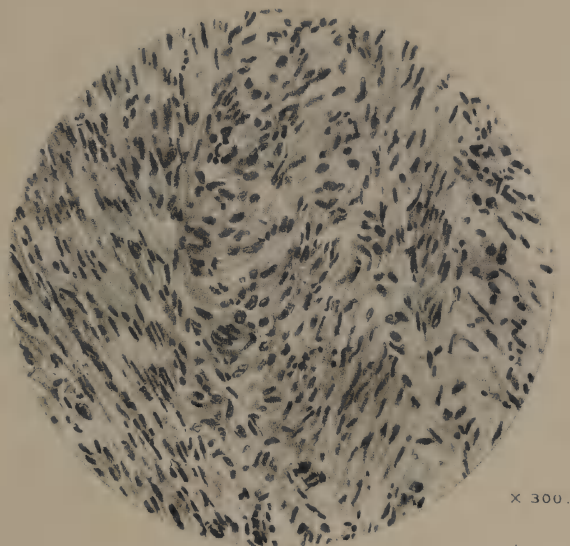
THE patient, a single woman, aged thirty-two, was admitted into Mr. Hayes's ward at the Mater Misericordiæ Hospital in January last, suffering from pain and difficulty in micturition. On examination, a tumour, of the size of a small pigeon's egg was found projecting from the urethral orifice. This tumour looked red and vascular, felt soft and friable, and could be traced up along the upper wall of the urethra, from which it projected so as to form a sort of ridge. During the operation for its removal it came away piecemeal. Microscopically it proved to be a typical spindle-cell sarcoma, with some patches of tissue, in which the nuclei were round, and separated by a rather abundant hyaline interstitial substance. Parts of the growth were also in a state of incipient mucoid degeneration.

What induces me to lay this specimen before the Pathological section is the rarity of spindle-cell, or, indeed, of any form of sarcoma in this position. Erichsen does not mention it in the eighth edition of his Surgery, nor do we find it in most text-books on pathology. The last edition of Ziegler's German work on Pathological Anatomy contains an allusion to the fact that the occurrence of sarcoma of the female urethra has occasionally been recorded.

[The tumour and microscopic preparation were demonstrated.]

PLATE.—Fig. 1.—Section of tumour $\times 300$. From a photograph by MR. ANDREW PRINGLE.

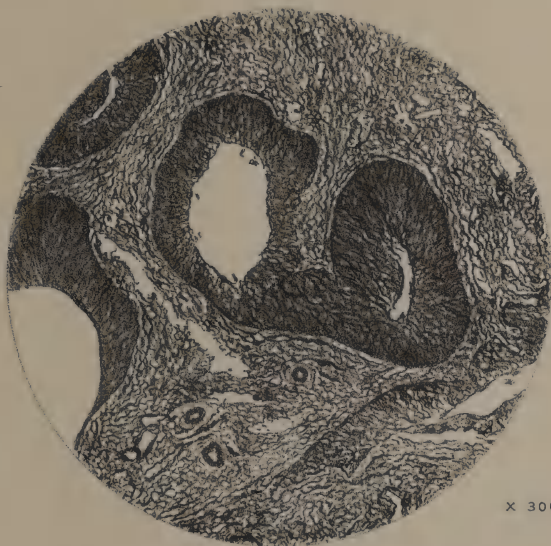
Fig. 1.



X 300.

SPINDLE CELL SARCOMA OF FEMALE URETHRA.

Fig. 2.



X 300.

PSEUDO-TABULES IN SQUAMOUS EPITHELIOMA IN CERVIX

ON THE HISTOLOGY OF EPITHELIOMA OF THE CERVIX.

By E. J. McWEENEY, M.A., M.D.;

Pathologist to the Mater Misericordiæ Hospital.

[Read in the Section of Pathology, March 8, 1895.]

THE patient, married, aged fifty-five, twelve years since her last confinement, came into the Mater Hospital, under the care of Dr. Nixon, suffering from heart disease. Complaints of pain and discharge from vagina caused her transference to the gynæcology ward, where Dr. More Madden found, on examination, that a red, highly vascular, fungating growth projected through the os externum. A diagnostic piece of the fungous mass was removed and handed to me. It proved to be a squamous-cell epithelioma, presumably originating from the lower portion of the cervical canal. The tissue is greatly permeated by small-cell infiltration, and many wandering leucocytes have penetrated into the interior of the newly-formed epithelial cells. The epithelial columns are large and thick, and made up of large cubical or ovoid cells, derived from the deeper layer of the stratified epithelium. Mitoses are numerous, pointing to rapid proliferation. The growth is highly vascular, and parts of it are in a state of hæmorrhagic infiltration. The pressure necessarily exerted on it during the operation is, perhaps, responsible for this. Many large unaltered epithelial cells are embedded in this necrotic material, and many of these still possess—remarkably enough—kinetic nuclei.

The conditions enumerated are, however, all of frequent occurrence in such cases, and, of themselves, would hardly entitle me to bring this specimen under the notice of the Pathological Section. There is, however, a feature in the sections which I think worthy of special attention—a condition which I have not previously observed. Many of the larger masses of epithelium are hollowed out in the centre, so as to look like very wide glandular tubules, lined with several

layers of columnar epithelium—such tubules, in fact, as are frequently encountered in malignant adenoma, otherwise known as adeno-carcinoma and columnar-cell epithelioma, such as we so often see in the rectum, stomach, and uterus. The central space, or pseudo-lumen, as we might almost call it, contains large, detached epithelial cells, often cubical, or even short-columnar in shape, and presenting various stages of nuclear break-down and phagocytic invasion. Amongst these lie numerous more or less degenerate-looking leucocytes, mostly polynuclear. There is on the section one epithelial column, which, traced from the free surface, exhibits an intermediate stage in the development of this hollowed-out condition. The deeper part presents an oval longitudinally-running fissure or cleft, as though some internal force had pressed asunder the centrally placed cells. Leucocytes have found their way, by what path is not clear, into the narrow space thus produced. Whether this “canalisation” of primitively solid epithelial cylinders is to be regarded as originating from the penetration into them of mesoblastic off-shoots, and therefore as an indication of attempted absorption—or whether the proliferating covering-epithelium is in some way influenced as to its arrangement by the close proximity of the columnar form—these are possibilities between which I cannot pretend to decide. It is a remarkable fact that similar changes *in the opposite direction* can very generally be observed in the metastasis, and occasionally in the primary tumour in cases of so-called malignant adenoma or adeno-carcinoma. Here we have the originally one-layered stratum of cells lining the tubules replaced by a many-layered lining, and the process may go on until the primitively tubular arrangement is replaced by solid epithelial cylinders. If, therefore, metaplasia of glandular arrangement into solid columns be granted, why should not solid columns, derived from covering-epithelium, undergo meta-

plasia into glandular or mock-glandular tubules? The more I study the intimate configuration of tumours, the more convinced I become that we are still far from possessing anything like a fundamental knowledge of the histogenesis of tumour cells and the causes of their varied arrangements. In conclusion, I will cite, as confirming the view just stated, a few words recently written by one of Virchow's most brilliant pupils, Hansemann:^a—"Carcinomata may, in their configuration, closely resemble the mother tissue, or *diverge more or less distinctly from its structure*, and the highest degree of divergence may either be *at once primarily developed*, or only gradually attained in the metastasis."

[The paper was illustrated with microscopic slides.]

PLATE.—Fig. 2.—Cavity formation in squamous-cell epithelioma, simulating gland-tubules $\times 300$. From a photograph by MR. ANDREW PRINGLE.

^a "Studien über die Spezificität, den Altruismus, und die Anaplasie der Zellen, mit besonderer Berücksichtigung der Geschwülste."—Berlin: Hirschwald, 1893, p. 77.

A CASE OF FIBROMA OF THE TONGUE.

By E. J. McWEENEY, M.A., M.D.;

Pathologist to the Mater Misericordiæ Hospital.

[Read in the Section of Pathology, April 5th, 1895.]

THE patient—a very muscular young man, aged twenty-three, who had at intervals exercised the calling of a prize-fighter—came under the care of Mr. Chance at the Mater, suffering from a swelling on the left side of the tongue, a little behind the tip. The swelling was on the dorsal aspect, and had been observed for two months, during which it grew rapidly.

Mr. Chance cut down upon the growth, which was perfectly encapsuled, and seemed to have little or no adhesion to the surrounding tissues, for it came away immediately. It was spherical, or nearly so, about the size of the kernel of an ordinary hazel nut, was yellowish, and almost translucent. Its exterior was perfectly smooth. Its general appearance was not unlike that of a nasal polypus, but was much firmer in texture. The growth was divided, when the cut surface was observed to be pale yellowish grey, and almost gelatinous, and was fixed in Foà's mixture of bichromate and sublimate, washed in running water 24 hours, passed through successive alcohols embedded in celloidin, and cut into sections averaging 10μ in thickness. They were stained with Ehrlich's hæmatoxyline, followed by a mixture of benzo-purpurine and acid rubin. The growth was thus found to consist of fibrous tissue, with a strong tendency to mucoid change, so that in many places the nuclei are few and far between, being separated by a large amount of structureless or faintly fibrillar ground-substance. Although most of the nuclei are regularly

linear or oval, the outline of many is peculiarly contorted and crooked. Groups of large, faintly staining "epithelioid" cells occur here and there. Towards the centre of the growth are several patches of hæmorrhagic infiltration, and one or two oval lacunæ, evidently lymph spaces, distended with red blood-discs, and containing a network of fibrin. In the neighbourhood of the hæmorrhages are numbers of large pigment-laden cells, whilst scales and granules of the same material lie free in the surrounding connective tissue. Under the microscope the pigment appears of a golden hue. The tumour is fairly-well supplied with blood-vessels, and amply so with small lymphatic clefts or spaces. It is enclosed in a stratified fibrous envelope several layers thick. Mitoses were not seen.

Fibroma of the tongue is such a rare affection that I think it only right to bring this detailed account of a case before the Academy. Mr. Bland Sutton does not mention it in his work on Tumours, and Ziegler merely refers to the possibility of its occurrence.

MR. CHANCE said it occurred in a fine muscular young fellow. He noticed a lump coming on the side of his tongue four months previously. He went to a doctor who opened it, but it did not get smaller. It was not inflammatory, and was very easily removed. There was no specific history.

DESCRIPTION OF A CONGENITAL MIXED TUMOUR OF THE NECK.

By E. J. McWEENEY, M.A., M.D. ;
Pathologist to the Mater Misericordiæ Hospital.

[Read in the Section of Pathology, April 5th, 1895.]

THIS growth was congenital, on the upper part of the patient's neck, about one inch below and in front of the angle of the jaw. The patient was a girl, aged about twenty-five, who came under the care of Mr. Chance at the Mater Misericordiæ Hospital, in November, 1894. The tumour was about the size of an ordinary orange, and was said to have increased rapidly during the previous months, so that her friends became alarmed, and—against the advice of certain local doctors—brought her up to Dublin for operation. Despite the deep situation of the growth, which was connected with the hyoid bone by a long and tough band of adhesion, it was successfully removed by Mr. Chance, and the patient discharged cured.

To the naked eye the tumour was oval in shape, and covered with a dense fibrous capsule. It felt very hard, and was covered with small elevations, which on section corresponded with small cysts, of which many appeared on the cut surface. The knife with which the growth was divided encountered many small nodules of cartilage and bone, and the whole cut surface may be said to consist of thick fibrous trabeculæ separating small thick-walled cysts, whilst in the trabeculæ and in the capsule of the growth were embedded very numerous small pieces of cartilage, and what appeared to be bone. Some of the pieces of bone looked like small undeveloped incisor teeth, for which, indeed, I took them at

first. Many of them were tubular. The cysts contained mucoid material—now coagulated by the alcohol. Many of the fibrous trabeculæ presented minute patches of black pigmentation.

Portions of the tumour were cut out, decalcified and sectioned, whereupon the following details were made out by the aid of the microscope:—

1. Cysts of various sizes lined with cubical epithelium, the nucleus being generally situate close to the basal end of the cell, the remainder of which looked clear and transparent, as though distended with mucoid secretion. These cysts resembled very closely those of the thyroid gland. The fibrous membrane forming their outer wall was often folded, so as to produce epithelium-covered projections or ingrowths, recalling the appearances in ovarian cystoma. Some of the cysts are almost filled up by thin lining epithelium—in this case very “high” columnar. Some of the larger ones, on the other hand, have their epithelium flattened and atrophic. The contents of these cysts are twofold: (1) granular, amorphous material, evidently albumen or mucin coagulated by alcohol, and (2) cells. These are large, rounded disc-like, or perhaps spherical objects, with a centrally-placed, deeply-staining, often-fragmented nucleus, surrounded by a wide zone of hyaline, peculiarly mottled or reticulated protoplasm. These cells are apparently desquamated epithelia from the lining membrane, and seem to be undergoing some necrobiotic change. There are, however, a few minute cysts, in which there is no lining epithelium, but which are full of cells of this sort. In one cyst the epithelium bears patches of minute hyaline outgrowths, visible with difficulty, and highly-suggestive of cilia. In size the cysts vary from the diameter of a fair-sized pea, downwards.

The *cartilage* is distributed in patches through the tumour. It is mostly hyaline. Here and there the matrix is faintly

fibrillated, and the cells are devoid of capsules and stellate, so as to resemble embryonic cartilage. The cartilage takes the shape of scattered nodules and bars, some oval, some annular on transverse section. Where one of these transversely divided bars is situated—as occasionally occurs—close beneath the basement membrane of a cyst, the juxtaposition is very suggestive of a bronchus.

The *bone* exists as nodules, plates, and hollow cylinders. Some of these are as much as a centimetre in length, and look like teeth. On section, their lumen is seen to be full of fat-cells. These little pieces of bone seem devoid of Haversian systems, but are composed of parallel lamellæ, with intervening bone corpuscles, concentrically arranged round the central canal where there is one. There is a distinct periosteum always present. The rest of the growth consists of tough fibrous tissue. Some calcified *corpora amylacea* were noted.

I have dwelt thus at length on the minute anatomy of this specimen, on account of its rarity and the interesting developmental questions to which it gives rise. Mr. Bland Sutton's work on Tumours gives no account of a tumour such as this, the author confining himself to describing persistent branchial clefts and "cervical auricles." Ziegler in his great work on Pathological Anatomy (I., p. 363, 7th ed.) states that "in the neck we meet not unfrequently with fistulæ and closed epithelium-lined cysts, the wall of which, in rare cases, includes other structures, *e.g.*, lymphadenoid tissue and remains of cartilage." In an important paper on Congenital Branchial Fistulæ in *Virchow's Archiv.*, Bd. 120, p. 385, and Bd. 121, p. 55, von Kostanecki and v. Mielecki discuss the relation of branchial fistulæ to allied branchiogenous malformations, and especially to branchial cysts. "These may arise either from the inner division of a cleft, when they are lined with ciliated or cylindric epithelium, or

from the so-called cervical sinus Out of the remains of branchial fistulæ, carcinomata, and other branchiogenous tumours may develop." These authors attribute congenital tumours of this region:—(1) To epithelial germs shut in during closure of the cervical sinus which is lined with ectoderm; or (2) To remains of the second internal gill-pouch (*Kiementasche*), especially of Rabl's branchial passage.

Samter's case (*Virch. Arch.*, 112, p. 70.) is a cystadenoma of a remnant of a branchial cleft with cystic lymphangioma. The case resembles mine in the presence of numerous small cysts. It formed a metastasis in the abdomen. The primary growth was congenital on the anterior margin of the sterno-mastoid at the level of the cricoid cartilage.

Tietze (*Deutsche Zeitschrift für Chir.* Bd. 32 Heft 5 & 6, 1891,) describes bilateral symmetrical appendages (cervical auricles, as Mr. Bland Sutton would term them), congenital on the neck of a two year old child, somewhat above the middle of the anterior margin of the sterno-mastoid. They were nipple-like, covered with normal skin, and one contained an axial rod of *reticular* cartilage, whilst the other contained a *small spicule of bone*.

Mr. T Holmes describes (*Path. Trans.*, 1864,) a congenital tumour beneath the sterno-mastoid of a male, aged eight, which was adherent to one of the nerve-cords going to the brachial plexus. It contained a very large number of small cysts, scattered through a soft, homogeneous, solid substance, which was found, on examination, to consist mainly of fibrous tissue, with a few "free nuclei." This was the third case of congenital polycystic tumour of the neck that came under Mr. Holmes' care at the Childrens' Hospital during the previous three years.

In October, 1887, Mr. F. Treves showed the Pathological Society a congenital cartilage-containing tumour of the left

side of the neck of a girl, aged three. Its position corresponded to that of the fourth branchial cleft.

Mr. Shattock (*Path Trans.*, Vol. 33, p. 289) describes an oval congenital tumour $4\frac{1}{2}'' \times 3\frac{1}{2}''$ symmetrical and central in front of the neck :—"Its section displays a loculated structure, large, cyst-like spaces enclosing a soft tumour-substance, which is in most places adherent to their walls. Histologically it consists of branching trabeculæ of hyaline cartilage, and acinous adenoid tissue, lying in young connective tissue. The glandular epithelium is cubical." He calls it a mixed tumour or teratoma of Cornil and Ranvier.

These are the cases presenting points of resemblance to mine, which I have been able to find in the literature accessible to me. It would seem as though this tumour owed its origin to elements derived from two sources at least—viz., the cartilaginous and bony parts, from a visceral *arch*, and the epithelial part to a survival and proliferation of the cells lining the neighbouring visceral *clefts*. As there were only cubical and columnar cells to be seen, we may assume that only the *inner* or hypoblastic division of the cleft is here represented. The anatomical position of the tumour and its connection by a firm band to the hyoid bone, would lead us to suppose that the second or hyoidean arch is the one of which the vestiges were incorporated into this tumour. Mr. Bland Sutton, to whom I submitted sections, was struck with the resemblance of the glandular elements to those of the thyroid—a resemblance which is not to be wondered at when we remember that the thyroid begins its existence as a diverticulum from the primitive foregut, and is, therefore, identical in its origin with the very similar tubules contained in this tumour. Lastly, as regards nomenclature, Mr. Sutton considers that this tumour comes under the head of "dermoids," which it most certainly does, if we accept his definition of them as "tumours furnished with skin or mucous

membrane occurring in situations where these structures are not found under normal conditions." I cannot help thinking, however, that to include under the head of dermoids, tumours quite devoid of all trace of cutaneous structure or cutaneous appendages, is misleading and apt to give rise to confusion. The tumour belongs to Virchow's division, "teratoma," and I fail to see the advantage of classing it with the dermoids, whither, neither anatomy nor etymology countenance its removal.

MR. CHANCE said it was peculiar from a surgical point of view. It turned the angle of the jaw outwards, causing considerable deformity. Its removal was difficult. It was firmly attached to the surrounding structures, quite unlike an ordinary glandular tumour. But the main difficulty in removing it was that, from an æsthetic point of view, the incision had to be inconveniently placed under the jaw, and was of small size.

ORBITAL TUMOUR.

By ARTHUR BENSON, F.R.C.S.,

Junior Surgeon to St. Mark's Ophthalmic Hospital;

AND

W. R. GRAVES, L.R.C.P., L.R.C.S.

Pathologist to St. Mark's Ophthalmic Hospital.

[Read in the Section of Pathology, April 5, 1895].

M. G., aged fifty-five, from Killucan, was sent to me by Dr. Lyons, of Mullingar. He stated that the left eye for the last twelve months had had redness of the eyelid and swelling at the nasal corner; that he had gone to a general hospital in June last, and had lachrymal probes passed, and was then sent home, after a stay of eight or nine days in hospital; that the swelling in the side of the nose was getting worse all the time, till he came to me in September last. I then found that there was a hard, lobulated tumour protruding from the side of the orbit, and pushing the left eye outwards and forward to a considerable extent. Over this tumour the skin was stretched very tightly, but did not seem to be actually involved by the growth, but it was very adherent to it on the apex of the tumour, though free elsewhere. The vision of the eye was $\frac{6}{18}$; there was slight commencing senile cataract, but the fundus was perfectly normal, and free from optic neuritis. The bone did not seem to be implicated and the motions of the eye were very little interfered with.

The tumour was removed (Dr. Bennett kindly assisting) by two incisions, including an elliptical piece of skin covering the most prominent nodule. The remainder of the skin was fairly easily stripped off, and the tumour was separated from its attachments. It was covered by an ill-defined capsule. It was about the size of a small hen's-egg, and extended as

far back as the optic foramen. The bone was bare and eroded, apparently by pressure, at the apex of the orbit, at the superior wall of the orbit opening into the frontal sinus, and at the nasal side opening into the nasal duct. Through this opening the air escaped freely when he blew his nose.

The tumour was soft and friable, and owing to the considerable adhesions to the surrounding structures, I can hardly feel sure that the growth was totally removed, but the wound healed up, and the eye returned to almost its normal position, leaving only very slight deformity. Dr. Graves' Report on the microscopic characters of the tumour, which he kindly cut and examined for me, is as follows :—

The tumour is very irregular in shape. At one end there is a piece of skin firmly adherent; the growth near this is pigmented, elsewhere it is free from pigment. On one side, not far from the skin end, there are several small pieces of bone adherent, and close to this a few fibres of striped muscle—probably the tensor tarsi—are entangled in the growth, which appears to have originated in the region of the lachrymal sac. On section it proved to be a large, round-celled alveolar sarcoma, pigmented in places.

He finds the following cases of orbital sarcoma have been recently recorded :—A case of sarcoma of the orbit extending into the cranial cavity has been recorded by Ayres, of Cincinnati,^a in a man of thirty-four years of age. Mr. W. J. Collins, of London,^b operated on a man of forty-eight years of age for sarcoma of the orbit. The growth appeared to spring from the region of the lachrymal sac, and proved to be a round-celled sarcoma. Dunn, of Richmond,^c describes a round-celled, giant-celled sarcoma of the orbit which was operated on four times in two years, and finally caused the death of the patient from exhaustion. He notes that at the third operation the neoplasm had chosen as its points of

^a American Journal of Ophthalmology. June, 1893.

^b Lancet. 16th Sept., 1893.

^c American Journal of Ophthalmology. April, 1893.

origin all the areas of bone from which the periosteum had been stripped in the former endeavours to eradicate the growth. White, of Richmond,^a gives the notes of a case of fibro-sarcoma filling the left orbit.

Dr. GRAVES, who examined the tumour microscopically, reported it to be a large round-celled alveolar sarcoma, with, in one place, near its anterior surface, a pigmented patch.

Dr. McWEENEY entirely agreed with the diagnosis made by Dr. Graves. He had himself lately examined a similar tumour removed by Dr. Werner. In his case, however, the greater part of the tumour consisted of fibrous tissue, with here and there islets of sarcomatous cells, with an alveolar arrangement. At first sight, without the history, the specimen would suggest a carcinoma, but he was of opinion that it was a large, round-celled, alveolar sarcoma.

Dr. PARSONS thought it was probably an example of alveolar sarcoma. But the diagnosis was very difficult. The alveolar structure was seldom present in sarcomata, but was always present in cancer. The only way to be absolutely sure would be to find whence the tumour grew.

Mr. BENSON, replying, said that at first Dr. Graves was uncertain as to the diagnosis, and it was only after examining a series of sections that he came to the conclusion that it was an alveolar sarcoma.

^a Ophthalmic Review. London. Sept., 1893.

MALIGNANT TUMOUR OF MIDDLE EAR.

By J. B. STORY, M.B., F.R.C.S. ;

Surgeon to St. Mark's Ophthalmic Hospital.

[Read in the Section of Pathology, April 5, 1895.]

THE extreme rarity of malignant growths in the middle ear induces me to bring the following case before the Academy:—

CASE.—Mr. W. E. was sent to me for an affection of his left ear by my friend Dr. Whitty, of Waterford, in September, 1894. The only history to be obtained was that the ear had been running for two months or longer, and been causing him constant pain, which had become much worse of late, subsequent to the extraction of some decayed teeth. In spite of this ear trouble and the pain he had been in good health enough to bathe constantly during the summer.

On examining the ear I found a most fœtid otorrhœa, and a large polypus springing apparently from the posterior and upper portion of the tympanum. There was a painful swelling at the apex of the mastoid process, which I regarded as inflammatory, but there was no tenderness of the skin over the mastoid process itself, nor tenderness on deep pressure.

I removed the polypus with Wilde's snare, and the painful swelling below the apex of the mastoid disappeared within two days after the operation. I found then what I had not observed before, a small granulation at the very entrance of the meatus on the posterior wall—there was no fistulous opening in it, and all the fœtid pus came from the tympanic cavity. Mr. E. could not stay in Dublin for further treatment, and went home to use antiseptic lotions under Dr. Whitty's supervision.

About a month later he returned to Dublin in a worse state than before, severe pains shooting all over the left side of his head, the swelling below apex of mastoid larger than before, a fœtid discharge, and a large bleeding polypus filling up lower part of meatus.

On October 31st I removed part of this polypus, and detected

necrosed bone on anterior wall of meatus. Three days later I put him under chloroform, with the assistance of my colleague, Mr. Arthur Benson, and cleared out all the granulations in the meatus with a curette. I then found both the anterior and posterior walls of the meatus necrosed—apparently the whole tympanic ring being implicated.

November 8th I removed a loose piece of bone from the anterior wall of meatus, and on the succeeding night he had the first good night's sleep he had had for weeks.

During the next fortnight, however, the swelling in the neck, before described, went on increasing, and a gland at the angle of the jaw began to enlarge also. The meatus, too, began to fill up again with granulations, and I had to clear them away a second time—this time with electro-cautery under local anæsthesia induced by cocain.

The swelling in the neck then began to subside, and air passed easily through the Eustachian tube and tympanum by Politzer's method. The violent pain, however, still persisted, though not so constantly as before.

He left Dublin only to return after some ten days, unable to bear the pain, and requiring hypodermics of morphia to enable him to sleep.

I found then the granulations in the meatus increasing again, and the swelling in the neck larger. It was plain that though some of the swelling was probably inflammatory—viz., an abscess—much of it was caused by mere glandular enlargement. I cauterised the granulations, and made the meatus and tympanum clear again, but there was no improvement in his condition, and Mr. Tobin then saw him with me in consultation, and I had the great advantage of his assistance in the subsequent conduct of the case.

We considered at that time that the disease was probably inflammatory, and that the best chance for the patient was to give free exit for purulent and other discharges by establishing good drainage.

On December 13th we made an opening into the mastoid by chiseling away some diseased and some healthy bone. Whether this opening extended into the antrum or not I am not even now perfectly certain. We got no pus from it at all events, and the only result in the patient's condition was that from that time till the end he never suffered again from the intolerable deep-seated pain he had in his head.

A week later we curetted the diseased gland at the angle of the jaw. No pus or caseous material was found in it. We also made

an incision along the posterior border of the sterno-cleido-mastoid muscle, over the most prominent portion of the diffused and apparently inflammatory swelling of the neck, and having divided the deep fascia passed a director and dressing forceps deeply into the tissues, and plugged with iodoform gauze. At the same time we removed some granulations from the meatus, which (alone) still continued to discharge fœtid pus.

Some ten days later M. E. had some teeth removed from the left side, believing that the pain he now suffered from might be caused by the teeth. I took the opportunity while he was under ether of probing the meatus and mastoid wound very thoroughly. In both there was necrosed bone firmly fixed in its place, and from the meatus there was still a fœtid discharge.

The wounds were dressed daily, and the meatus syringed out with an antiseptic lotion. For a long time the water was able to pass down the Eustachian tube when the meatus was syringed, and the fœtor quite disappeared from the pus in the meatus.

No particular change occurred for some weeks.

On January 4th, and again on January 20th, a piece of necrosed bone was removed.

On January 23rd he developed Bell's palsy.

On January 26th several spicules of dead bone were removed.

Towards the end of January his speech began to be affected. Latterly he was only able to speak in a whisper, and that with great difficulty. He also developed a profuse expectoration of thick viscid slimy mucus, which at first came solely from his pharynx, but, after a time, was also coughed up from the larynx and trachæa. This expectoration became very much diminished in quantity after a time, and the lungs themselves were never actually diseased. The optic discs were healthy when last examined shortly before his death. The swelling in the neck slowly increased, and all the glands of that side of it began to enlarge one by one, and it became evident to us that the patient was suffering not solely from inflammation and caries of the temporal bone, but from some neoplasm which had originated in the tympanic cavity or in some deeply-situated portion of the temporal bone. This view was also impressed upon us by the gradual appearance of florid granulation springing out of the incision which had been made for the purpose of affording free drainage, and was finally rendered certain by microscopical examination of portions of tissue, which was very kindly made for us by Professor Scott.

The patient gradually became weaker, and died early in the month of March, less than eight months after the first observation of any aural trouble.

Professor Scott will inform the Academy as to what the new growth is, histologically.

I have looked up some authorities on the subject of cancerous growths originating in the middle ear or temporal bone. They are extremely rare.

Wilde ("Aural Surgery") records three cases of malignant fungus occurring in his practice, all of which implicated the tympanum and temporal bone, and probably also originated in either of these localities.

Toynbee records also three cases—two of encephaloid cancer and one of fungus hæmatodes. He believes the disease originates in the tympanic cavity.

The observations recorded by more modern writers are few and unsatisfactory. So far as I can ascertain no case similar to that here recorded has been described in any publication since these of Wilde and Toynbee.

That primary malignant growths in the tympanum or temporal bone are extremely rare may be inferred from the fact that, for the last seventeen years, during which I have been on the staff of the largest ophthalmic and aural hospital in Ireland, and for the most of that period at the head of the institution, where we see some 1,000 new ear cases every year, no case of malignant disease has been observed.

Report by PROFESSOR SCOTT on Mr. Story's case of malignant disease of middle ear:—

"Two very small portions were placed in my hands, one having been removed from the extreme auditory meatus, and the other from the fungating tissue at the edge of the wound in the neck. These pieces were hardened, and when cut were found to have a similar structure. The mass consisted of a number of small cells, either round or oval-shaped or fusiform—the round shape predomi-

nating—between which could be seen fine fibres of connective tissue. Small blood vessels were numerous, these being generally surrounded by a small amount of loose connective tissue. In my opinion the neoplasm must be regarded as a sarcoma.”

MR. BENSON said he saw the case before the present diagnosis was arrived at, and the idea of malignant growth had never occurred to him. At that time it looked very like a severe case of mastoid implication, as a sequence of middle ear disease.

DR. McWEENEY called attention to the presence of large masses of oat-shaped cells, without any intercellular substance. Also that the tendency of these cells was to tail off into the connective tissue which surrounded the entire mass. This seemed to point to rodent ulcer, but there were no cell nests.

MR. STORY, replying, said that before the microscopical examination was made he thought it was probably an epithelial growth. This was based on the view that carcinomatous growths spread more by the lymphatics than by the blood vessels. After the first gland had been scraped out and the incision made into the swelling below the apex of the mastoid, the case remained quiescent for some time, but then one by one the lymphatic glands of that side of the neck began to be involved. The patient died, not from perforation of the malignant growth into the cranial cavity, but from weakness, with difficulty in deglutition, which came on simultaneously with the loss of speech. The only septic matter observed all through the case came from the meatus in connection with the diseased bone.

DR. SCOTT, in reply to Dr. McWeeney, said that he might have raised another objection, namely, that it was simple granulation tissue. The masses of tissue he got were very small, but were taken from different parts, and it was likely that it was a big cancerous mass. The whole growth seemed to be essentially a growing mass of cells. The cells were somewhat epithelial in character, but he believed that it was a sarcoma and not a carcinoma.

HYPERTROPHIC CIRRHOSIS OF THE LIVER.

By H. C. TWEEDY, M.D. F.R.C.P.;

Physician to Madam Steevens' Hospital.

[Read in the Section of Pathology, April 5th, 1895.]

THE disease named variously, "Hypertrophic Cirrhosis," "Biliary Cirrhosis," "Monolobular Cirrhosis" and "Hyperplastic Fibroid Degeneration," is of sufficiently rare occurrence to justify me in submitting to this Section the liver taken from a patient who recently died in Madam Steevens' Hospital, more especially as the case presents a feature—viz., ascites, not regarded as specially common in this condition, and tending also to show that the grounds for the divergence of opinion between the French and German schools, as to the pathology of the disease, are more imaginary than real.

CASE.—P. S., aged thirty-six, a railway porter, was admitted to Steevens' Hospital on the 7th January, having been sent up to Dublin to be under my care, by my friend Dr. Dobbs, of Athlone. He was a large, corpulent man, and admittedly an excessive drinker for some years. He stated that he had not felt well for a year past, but that about six months previous to his admission his abdomen had gradually become larger, and his skin had become jaundiced. When examined on admission the first thing noticeable was the jaundice that was present and also the great size of the abdomen, which was found to measure forty-four inches in circumference at the umbilicus. The superficial veins were easily traceable, but there was no marked "Caput Medusæ." The

abdominal walls were evidently loaded with fat, and the umbilicus was retracted, but still some slight but distinct fluctuation indicated the presence of a moderate amount of fluid in the peritoneal cavity, while the liver was felt to be enormously enlarged, but painless to the touch. The area of splenic dulness was also increased, though the spleen itself could not be felt. The pulse was somewhat accelerated and there was some fever (100°). There was also some distress in breathing, but evidently the result of pressure, as no disease was detected in the heart or lungs.

The urine was scanty and high coloured, and gave the usual bile reactions. The quantity varied from eight to twenty-five ounces daily, the average quantity passed per diem from his admission till the day of his death being $16\frac{3}{4}$ ounces, and it contained also a small amount of albumen. Beyond the facts recorded there were little of clinical interest to notice. He became delirious on the 17th and was very difficult to manage at night. The temperature fell to normal between the 19th and the 22nd, but it began to rise again somewhat on the 23rd, and he died on the 25th, the delirium having continued till the time of his death.

Dr. Earl kindly made an examination for me twelve hours after death, of which the following are the notes with which he has supplied me:—

“There was a large quantity of subcutaneous and abdominal fat.

“The right pleural cavity was obliterated by old adhesions. Both lungs were affected with slight hypostatic congestion, and were otherwise normal. The heart and its valves were normal. “The abdominal cavity contained about three pints of fluid. There was no peritonitis. The liver was uniformly enlarged; very slightly granular on surface—of a greenish colour. It weighed twelve and a half pounds. The cut surface was smooth, of yellow colour, becoming green on exposure. The capsule not thickened. The substance of the liver was rather tough. The portal vein and hepatic artery were normal. No obstruction of common bile-duct or other ducts. The spleen was enlarged, weighed twenty ounces, but was of about normal consistence.

“Both kidneys enlarged—right weighed seven and a half ounces ;

left, eight ounces. Each presented several congenital fissures. The capsule was slightly adherent. The cortex appeared diminished in thickness, in some places. The pancreas, stomach, and intestines were normal.

“*Microscopic Appearances—Liver.*—The connective tissue in the portal canals is greatly increased, and thus angular masses of tissue are formed, which are often connected by thinner bands one to another.

“In many cases the lobules are thus completely surrounded by connective tissue.

“The lobules are invaded by connective tissue bands which run between the liver cells.

“Frequently liver cells in groups or singly are seen quite isolated by connective tissue from the neighbouring lobules. There are, where the connective tissue abuts on the lobules, a large number of *newly-formed bile ducts*. There is a small amount of round-celled infiltration in the connective tissue, here and there in the sections. The liver cells are to be seen in three conditions :—

“1st. Deeply stained by bile, and containing masses of bile pigment. The pigment lies sometimes between the cells. The nuclei of these bile-stained cells stain feebly or not at all. These usually lie at the margin of the lobule.

“2nd. Cells in a state of extreme fatty infiltration, so that many fields of the microscope resemble adipose tissue.

“3rd. Comparatively normal cells, but unusually small, with nuclei that stain very deeply.

“*Kidney.*—The kidney is in a state of interstitial nephritis. The glomeruli are much affected by fibrous degeneration, and some are quite atrophied.

“The tubes are comparatively unaffected.”

The great size and weight of the liver in this case seemed to depend upon two causes—viz., the overgrowth of connective tissue, and also the fatty infiltration of the liver cells.

As regards the causation of this condition, the French and German Pathologists hold different views.

The French School believe that the newly-formed tissue is of bile-duct origin; that the overgrowth of cicatricial tissue spreads along the ducts and tends to produce many new ducts. This theory is based mainly on the fact that cirrhosis has been produced in animals by ligature of the bile-duct, and again in man a fine cirrhosis has been shown to follow obstruction of the bile-duct,^a or even as a consequence of its congenital absence.^b In the present case it cannot be caused by obstruction of the main channels, as these are found to be pervious. The bile-duct theory does not find acceptance with German authors. Ackermann,^c for instance, regards the new tissue as a product called forth from the arterial branches and their capillaries by the presence of dead and degenerated liver cells at the border of a lobule.

Both these theories might be reconciled on the assumption that an irritant conveyed by the blood-vessels, branches of the portal vein, or hepatic artery, may cause the development of the new tissue along the course of these minute branches, and that, in consequence thereof, inflammatory changes may be set up along the branches of the bile-duct, causing stagnation of the contents. This supposition with regard to the blood-vessels would account for the ascites which occurs occasionally—as in the present instance—as well as for the more common symptom of jaundice.

But the probabilities are, that one or other cause predominates in different cases in the same way, as there can be no doubt that the general pathological process is the same in this affection as that which occurs in common alcoholic cirrhosis—the main points of difference being that, in the former case, the amount of new tissue is much greater,

^a Hamilton's Pathology, Vol. II., p. 196.

^b Gibbe's Trans. Path. Soc. London. XXXIV. 1882. P. 129.

^c Arch. f. Pathologie. CXV. 1889. P. 216.

enveloping and invading single lobules with the remarkable formation of new bile-ducts ; while, in the latter case, groups of lobules are surrounded and isolated, while the amount of newly-formed tissue is much less, and the invasion of the lobules as well as the formation of new bile-ducts scarcely takes place to any appreciable extent.

THREE CASES OF FRACTURE OF THE FIBULA.

By E. H. BENNETT, M.D., F.R.C.S. ;

Surgeon to Sir P. Dun's Hospital;
Professor of Surgery, Trinity College.

[Read in the Section of Pathology, May 17, 1895.]

WITHIN the last two years I have had under my care in hospital three cases of injury of the ankle-joint, similar in kind and differing from each other only in the degree of dislocation of the joint, and in the time which elapsed in each case between the occurrence of the accidents which produced the dislocations and their presentation at hospital for treatment. The details of the fracture of the fibula which was present in each were exactly the same. The accidents that produced them were, respectively, a twist of the foot when alighting on the ground after jumping from a fence; tripping in a mowing machine by which the foot was fixed, while the body of the patient fell forwards over the machine; and lastly, a fall down a flight of stairs while carrying a heavy pail of water.

In all three the patients found themselves unable to use the limb immediately after the injury, and had to be carried to bed without attempting to put the injured limbs in use. It is not possible in accidents of this kind always to determine with exactness the quality of the wrench of the ankle which produced the fracture, but the inspection of a series of pathological specimens combined with clinical study, I think, removes all doubt as to their mechanism. I shall read the notes of only one of my cases in detail.

M. H. Q., aged fifty, was admitted to hospital on February 2nd, 1895, with a malunited fracture of the lower end of the left fibula.

She gave the following account of her injury:—On October 31st, 1894, three months before her admission, while carrying a bucket of water downstairs, she slipped and fell down the whole flight twisting her foot some way—she does not remember how—under her. She made attempts to get up and walk, but found that she was quite unable to put her left foot to the ground owing to the intense pain caused by the effort as well as by the loss of power in the limb. She then called for help, and was carried up to bed by some neighbours who sent her next day to a hospital. On admission the limb, which to the best of her knowledge was without any deformity, was merely superficially handled and put up carelessly in a box splint packed around with some wadding. It was left so for six weeks without alteration or readjustment. When the box splint was removed, it was then loosely wrapped in a broad flannel bandage which was readjusted about every three weeks, until finally she left the hospital after three months from the date of the injury with the limb in a condition of most extreme deformity. [Cast here exhibited.]

This cast represents the condition of the ankle at this time. The foot is in extreme extension, and is displaced backwards and outwards. A very deep sulcus separates the heel from the surface of the back of the leg, and on the inside the tibia with its malleolus projects strongly forwards and inwards. Over this projection the skin was tense and shining, and in part ulcerated. The foot and leg were œdematous. The patient could make no attempt to use the limb further than to touch the ground with the great toe. In this case it is clear that a fracture was recognised as being present, else the box splint would not have been used. The woman states that nothing like the present deformity existed at that time. It is clear, I think, the deformity occurred during the lax treatment by the box splint.

It appears to me that we are not to attribute all the blame for these failures in diagnosis and treatment to the surgeons who have had the misfortune to maltreat them. The surgical writings of the present day which are accepted as text-books, contribute by their defects to errors of diagnosis, and so to

bad treatment. Many omit any description of the particular fracture which occurs in these cases—the fracture of the lower end of the fibula—caused by the tearing away of the external malleolus through the strain of the external lateral ligament of the ankle. For example:—

There is no mention of this injury in Erichsen or Pick's books, and the latter occupies himself only with the mechanism of Potts' fracture. If one takes as guides to the site of fractures of the lower end of the fibula from wrenching of the ankle, those who place the fracture from two to three inches from the lower end of the bone, the examples of the fracture before us will be readily overlooked; the more so if they be without displacement at the first. Equally erroneous is the statement that Potts' fracture is the commonest fracture of the lower end of the fibula. Erichsen writes:—"The fibula may be fractured about three inches above the ankle, the tip of the malleolus—that is, the inner malleolus—being splintered as well. This constitutes the form of injury called Potts' fracture, and is, perhaps, the most common fracture in this situation."

As to treatment, too, we read strange directions. The newest American authority, who, indeed, recognises the existence of the injury, states that "No treatment is needed except rest, with the support of a dressing to prevent the occurrence of another twist of the foot." This looks like the treatment which has proved so disastrous in the case I have presented. If the relative frequency of this fracture is tested by grouping the specimens of the various fractures of the lower end of the fibula produced by indirect injury, contained in a large collection—such as the Museum of Trinity College contains—formed without any attempt at selection, we find that Potts' fracture, as strictly defined, does not occupy the position of the most common fracture.

If, then, one approaches the diagnosis and treatment of

fractures of the lower end of the fibula without the knowledge of the existence of this fracture, or, even recognising it, regards it as a rare and exceptional injury, errors of diagnosis and of treatment must follow. I can, in this Section, deal with treatment only so far as it helps to clear the pathology of the injury. In my three cases, manipulation combined with traction enabled me to break through the ill-placed callus, and to reduce the dislocation of the ankle in a great measure. The length of the time in the three cases was—in the first, a month; in the second, six weeks; in the last, three months.

DR. CROLY said that the fibula was not usually fractured as high up as originally described by Pott. If there is great tenderness over the lower end of the fibula when pressed on there is a fracture there. Very often it does not present the typical appearance of a Pott's fracture, the foot not being displaced. Pott never mentioned anything about the tip of the internal malleolus being knocked off.

ABDOMINAL ANEURISM WHICH RUPTURED THROUGH THE DIAPHRAGM.

BY HENRY GRAY CROLY, F.R.C.S.;

Senior Surgeon, City of Dublin Hospital ;
Past President, Royal College of Surgeons :

AND

WILLIAM R. GRAVES, M.D.;

Pathologist to the City of Dublin Hospital ;
Member, British Institute of Public Health.

[Read before the Pathological Section, May 17, 1895.]

J. O'N., aged thirty-five years, bodymaker for Dublin, Wicklow, and Wexford Railway, was admitted to the City of Dublin Hospital on March 27th, 1895, complaining of a pain in the loins, chiefly in the region of the left kidney. The pain, which was severe, he first felt about five months previously; but it ceased until about a month before his admission into hospital, and of late he lost flesh considerably.

On admission he was very anæmic, and had an anxious expression. On examination the lower end of the left kidney could be felt, the size being normal; there was no blood in the urine. The treatment consisted of perfect rest in bed, dry cuppings over the loins, and the application of hot-water bags, enemata, and careful regime, with occasional sedatives, also iodide and bromide of potassium. No tumour of any sort could be discovered by palpation, except the projecting kidney. In my clinics I said the kidney, though easily felt, was apparently normal in size, and seemed to be pushed down. There was albumen in the urine.

On May 1st the patient was attacked by very severe pains down both legs, the pain coming on in spasms, and following the branches of the anterior crural nerve. Bromide draughts gave him ease, and he slept fairly well during the night.

The following morning (May 2nd) he seemed better, and said all pain had left him. He got out of bed at about 4 30 o'clock, and was speaking to the patients in the ward. He went back to bed again at about 5 o'clock, took a good tea, and was speaking to

the nurse at 5 30 p.m., apparently quite well. At 6 o'clock he rose in the bed for a moment, groaned, and fell back and expired in a few minutes.

The diagnosis of abdominal aneurism is a matter of great difficulty, and the disease is more frequently discovered after death of the patient than detected, or even suspected, during life. The symptoms frequently resemble lumbago, intestinal trouble, rheumatic gout, or malignant disease of the viscera; and it is only when these tumours can be recognised by the senses of sight and touch, assisted by auscultation, that anything approaching a correct diagnosis can be made.

Autopsy, by Dr. Graves.—Made a left lumbar colotomy incision, and found the left kidney displaced downwards, and felt the lower edge of a tumour, which afterwards proved to be an aneurism of abdominal aorta. Placed the body on its back, and made the usual median incision. On putting in the knife at the second costal cartilage, about ten ozs. of blood-stained serum escaped. On opening the thorax, the left pleura was found to be quite full of clotted blood, the left lung having collapsed. On removing the lung and blood clot from the left thorax, it was possible to pass the fingers through the diaphragm into the sac of the aneurism which was in the abdomen. On opening the abdomen, the spleen was found to be a little enlarged, and displaced downwards and forwards. On removing the stomach, spleen, and bowels, the sac of the aneurism came into view. The aneurism sprang from the abdominal aorta posterior to the celiac axis, and was firmly adherent to 12th dorsal and 1st and 2nd lumbar vert. The sac of the aneurism was also firmly adherent to the left psoas muscle and to the diaphragm. On laying open the aorta from the front, the neck of the sac was very plainly seen.

Kidneys.—Slightly granular and fatty.

Heart.—Atheromatous patches on mitral valve. Patent foramen ovale arch of aorta very atheromatous.

Lungs.—Congested and venous-looking.

DR. M'WEENEY wished to know the mechanism by which an aneurism situated behind the celiac axis ruptured into the left

pleural cavity. In the section of the kidney there was only a small part which showed increased connective tissue, with a few atrophied glomeruli. He did not consider that sufficient to make it a granular kidney. The kidney also presented a smooth surface. A short time ago he saw a case in which an aneurism, situated in the middle of the dorsal region of the aorta, had ruptured into the substance of the lung and not into the pleural cavity. The man fell dead, and blood gushed from his mouth and nose.

DR. CROLY said that the man was admitted and treated for kidney disease. The only explanation he could give of the absence of pulsation was, that the tumour was bound down by very strong adhesions.

DR. GRAVES, in reply to Dr. M^cWeeney, said that the aneurism had become glued to the psoas muscle, and had eroded it and shoved it up, and that it had then burst through the diaphragm. He agreed with him that the kidney only showed interstitial changes in one part.

SECTION OF STATE MEDICINE.

DEFECTIVE INFANTILE LIFE UNRECOGNISED BY STATE MEDICINE.

By WALTER BERNARD, F.R.C.P.,
Londonderry.

[Read in the Section of State Medicine, April 19, 1895.]

It is a duty almost incumbent on those who have passed through four decades of family practice to give some experience to their College and brethren of their views on one or more of the questions called social.

On these vital questions, I do not lay claim to anything new, but having, for so long a period, waded through the drudgery of the family doctor, which can only be rendered actual in its true force by the oft quoted words—*per varios casus, per tot discrimina rerum*, I claim a hearing.

We, who have so long laboured in the fields cannot but see the importance of encouraging every movement and fostering efforts, however small, to disseminate knowledge in diagnosing those conditions of society which are unfavourable to true national progress.

The increase of populations, large armies, national debts, immigration and weaklings, are not alone the cause of our national decline. In our days barriers are raised and provision, in a given ratio, made against such contingencies. Arbitration, of late years, has successfully come to the rescue, and life and money are not so ruthlessly wasted by barbarous and unnecessary wars. And the increase of populations is to some extent met by the increase of food stuffs. The

weaklings too, who in the evolution scheme were cut off as unfit, though now artificially preserved, do not live the allotted time, for in the males there is an increase in the death rate above 35 years, and in the females above 45 years. As we do not endeavour to set a limit by forbidding the banns, nature again interferes and shows that our altruism is in excess of our philanthropic measures.

In these days of Preventive Medicine, the knowledge for amending mankind cannot be merely learned. We must go to the laboratory of the household, and learn there all the social relations of domestic life. We, who are so often brought into frequent contact with its many sad realities, cannot close our eyes to evidence constantly brought under our observation, that the importance of family life is decaying. The authority of the father has declined. More requirements are looked for, more discontent, more unquiet, more unrest, and less self-sacrifice and consideration for others, especially for the old and enfeebled. Out of these apparently small matters, which are entertained and felt, but not spoken of, a hideous brood of evils frequently arises, leading on to a want of energy, and "the mother of all the evils"—idleness. This idleness and want of energy are very much promoted by youths smoking, in excess, cigarettes. In my opinion the physical and mental conditions of those young smokers show signs of damage. The right-sided
43 disturbed action of the heart, the epigastric pulsation, and the character of the pulse with lowering of the perceptive faculties, are the factors which chiefly help to leave them behind in the struggle for existence.

To meet these and similar enfeebling practices, a step forward in the right direction would be to inculcate a consciousness in the homes of the people that the obedience of particular laws is *right*, and disobedience of fixed laws *wrong*. To enforce the necessity of making them believe in the fact

of manhood, and what life really is, and how to fit themselves to the condition of life, consistent with their organisms and surroundings.

None can more fully realise how much good can arise out of work of this kind than the family doctor, who has to deal with many-sided abnormalities. He who is acquainted with the pedigrees and histories of four and five generations cannot fail to know the singularities and eccentricities of the fathers and grandfathers. But, though the offspring tend to inherit every attribute of both parents, it does not follow that peculiarities and eccentricities which underlie disordered functions need appear; but, on the contrary, under early judicious management, as life goes on, disordered processes can be made to disappear.

On the highest authority we have it, that insanity can be arrested in its incipient stage, and that there are not only mild and transient forms of insanity with which the general practitioners have to deal, but in 1889 it was shown that they had, outside lunatic asylums, under their immediate care 27,266 insane persons. In this, as Sir Crichton Browne states, a large amount of labour and solicitude fall to the main body of our profession.

Though our management of the insane outside and inside lunatic asylums is excellent, yet our fixed rules, enormous literature, and combinations of well-established organisations in Europe and America have not diminished insanity, and at best only lop off the branches, and do not get at the root of the mischief as soon as the infant is born.

A painful impression has long since been left on my mind, that the well-known combinations of human efforts have done but little to impart knowledge to the household and to the practitioners of medicine how to deal with defective human beings in the beginning of life, by the continual operation of external circumstances.

The excellent and wise teaching of Connolly, more than a quarter of a century ago, for putting on the break in the homes, has not, as shown by the operation of time, been put in force as an applied system. And what are the results—terrible and appalling preventable disasters. Not only have suicides increased, but we have many different degrees of abnormal acts rising into high pitches of intensity, as in the Wyndham, Fergusson, and Saunderson cases.

It is too little diffused among the general public that disorders of the mental and physical faculties become manifest soon after mental existence begins, and that the early recognition of abnormalities which point to underlying disordered functions is the only safeguard towards early safe management. To the man of keen insight, extended experience and close observation, the foretelling by observation of what tendencies are in existence becomes almost prophetic.

The cranial anthropology established by Lombroso, and his exhibition of asymmetry as he illustrated it on a living specimen at the International Medical Congress at Rome, I had the advantage of witnessing. His psycho-physical views are not in accordance with my experience. Though Lombroso, in his criminal psychology, may be a genuine interpreter of Nature, and though his biological abnormalities are typical of many living cranial and facial formations, diagnostic according to his school as evidence of a criminal nature, yet I, as one of the crowd having had under my supervision somewhat similar cranial abnormalities, found that their possessors when carefully nourished, trained and watched with guarded care through childhood, became excellent citizens, not only able to take care of themselves, but useful to those by whom they were surrounded.

In this as in other branches of psychology, there is an absence of precision in formulating its ascertained facts. But the family doctor's psychology is more practical. In it

there is not so much of the complexity of the interaction of cause and effect, as he is afforded opportunities of almost daily observing conduct and practical welfare from childhood to middle age. In many there can be but little absence in formulating ascertained facts. He cannot fail, through such channels, to detect the early signs of the lower propensities springing up in the type of the non-ethical, who are somewhat akin to the psycho-physical formations of the embryonic criminal. This practical knowledge seems an antithesis to Darwinian and Lombroso anthropology, but many living specimens can be exhibited where the higher propensities have crushed out the lower—such as destructive tendencies, lies, thieving—which, as is well known, usually lead on to miseries and terrible disasters in the homes.

Every man and woman is, to a great extent, moulded to circumstances by the influence of circumstances. And arrests of development in the brain can be compensated for as well as arrests in the upper or lower extremities. None of this practical knowledge can be realised by the young practitioner, whose work first commences with the treatment of children. When launched into the homes of the people his guiding principles, even in infant feeding and nutrition, partake somewhat of the nature of a caricature. Without a supplied system of jurisprudence he commences to work in fields unknown, as there are no rules formulated or framed for his guidance which would carry weight and importance in domestic life, and which would more fully ratify voluntary co-operation in prescribed rules.

In these days of stress and strain the dictates of common sense, humanity, and justice, enforce the needs that exist for teaching both lay and medical minds that mental unsoundness arises from bodily causes, which can be limited and not only controlled but crushed out by physical remedies acting on the bodily side.

My statements are deduced from positive proofs—living specimens of long standing. But I am sorry to have to state that many are determined not to listen to pure reason, or do not understand, or, perhaps, are incapable of understanding what pure reason really means. We who have survived, and have not sat passively in the stalls watching the play of Society, cannot but feel strongly on this important question. We know that neglected early warnings of mental disturbances have ended in disasters, and warnings not neglected have resulted in establishing almost normal mental and physical health, and good citizens, not only able to stand on their own individualities, but also of benefit to society in general. In this particular branch of preventive measures we call loudly for rules for the young practitioners and for the homes. One can hardly imagine, except those who have dearly bought their experience, how much threatened evil can be averted by level-headed management even in small matters. In a hygienic point of view what I here hold in my hand, as a time table and rules for taking care of the mind and body, has in this way rendered great and good service.

If, therefore, these simple rules unstamped either by sanitary or State authority have helped by inculcating order, thrift, and cleanliness, to avert death and misery; and if this introduction of the thin end of the wedge into the hygienic imagination is productive of good results, how much more productive would be measures issued by authority, with which the members of our profession ought to be armed when engaging in family practice.

A perfection and obedience to known laws in mental and bodily hygiene can be witnessed at any time in a well-managed asylum. There is an *esprit de corps*, from the superintendent through all grades, and on to the patients. Every man's and woman's physical and mental angularities

are not only known, but carefully noted, so that he or she may be dealt with according to fixed principles. To outsiders, this judicious discipline is not realised. Nevertheless the benefits arising therefrom are eminently curative. If this be so in the later stages of the defective, how much more so would it be in the earlier stages if somewhat of a similar supervision and knowledge were applied through the family physician.

Even the most wayward criminals can be held in check by knowing their lines of thought; and by judicious management, sympathy, and kindness, a check action can be applied. I have, here, a photograph of one of our worst criminals with a short history of his career, extending over forty years. Although apparently a hopeless case, I myself could make him a little normal from time to time by means of sympathy, kindness, attention, and good feeding. He lately died of influenza, and, I am sorry to say, my forty years' experience of his yearly defects of reason has come to an end. But the mental defects of criminals are not investigated by State Medicine as they should be, so we persist in keeping the judges, lawyers, and jurors still in cloudland.

In looking back over old disasters, to say the least of it, medical expert evidence showed an absence of the *noblesse oblige* due to Medicine, "the mother of all the sciences." It was inaccurate, inconsistent, and unwise. Its unwisdom was exhibited by a determination to carry it out at any cost. The family and personal history were very frequently unknown to the so-called expert, and results very clearly pointed to the main motive, which was to get the criminal or supposed lunatic off by a jumble of words, or vague misrepresentations.

DR. J. W. MOORE said that the Academy owed a debt of gratitude to Dr. Bernard for coming so far. Within the last decade or two there was a wonderful change regarding the value put on the

life of children. The death-rate among young children has been steadily falling. In the great cities there were many philanthropic associations whose sole object was the improvement of childhood, as Dr. Barnardo's in London, which produced splendid specimens of boyhood.

SIR W. STOKES said he would refer to one thing mentioned in the excellent rules shown by Dr. Bernard. It was the importance of educating people, and this more particularly in Ireland, to a better knowledge of how to cook their food. He believed that one of the main causes amongst the poorer class of having recourse to the public-house was the want of properly cooked food in their homes. A great many physical and mental troubles were due to intemperance.

DR. NINIAN FALKINER said there were two defects possible in infantile life, one physical, the other mental. Referring to the mental impressions received during childhood, he considered that a great many of the unfortunate careers of men and women were due to immoral suggestions made to them in their infancy by nurses.

DR. RAINSFORD said he had had three years' experience in a very large lunatic asylum, and he thought that the early training received in childhood had a great effect on the after-life of the individual. Considering the manner in which the children are brought up in large cities he said it was a marvel that there were not more criminals than there are.

The CHAIRMAN said that there was not nearly enough done in the training of medical men on how to bring up children. If the children are not looked after, a great deal of damage is done both to them and their children, if they ever have any. There was no doubt that babies could be educated from their cradle. With regard to the question of nurses, referred to by Dr. Falkiner, he thought great damage, both physical and mental, was done by them. The practice of lying was learned in the nursery. These evils were produced by the mothers paying others to do what they should do themselves. In almost every instance in which the Society for the Prevention of Cruelty to Children, of which Dr. Rainsford was the medical officer, proposed to start a branch in any town, they were met with the reply that they knew how to take care of their children. The clergymen were especially strong in this opinion. The introduction of the School Board system into England has had the effect of catching a great number of street

Arabs. There were two institutions in Dublin, one Protestant and the other Roman Catholic. The Reports of these institutions were of the most encouraging kind. With reference to cookery, he was told a story by a parish priest. He went to a house about dinner hour and asked when the man would be in, and was told presently. He asked the wife where the man's dinner was. She replied in the press, where there was cold meat and potatoes. On further questioning, she said it was cooked two or three days. This was the way in which the husband was treated when he came home. Dr. Bernard had done more than any single man to improve the social condition both of children and grown up people in Derry. The number of uncertified deaths in Dublin was appalling. It meant either that a medical man was not called in at all, or that he was called in so late that he was not able to give a certificate of the cause of death.

DR. BERNARD, replying, said the Jubilee nurses had cleared the way for ladies to visit the poor people, and teach them cooking, thrift, and cleanliness. If rules were formulated by the State, insanity would be diminished; the lower classes to carry out the rules as well as the upper classes.

PRIVATE HOSPITALS, OR HOME HOSPITALS.

By J. W. MOORE, M.D., M.Ch., B.A., UNIV. DUBL., F.R.C.P.;

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Physician to the Meath Hospital.

[Read in the Section of State Medicine, April 19, 1895.]

THIS is essentially the age of Nursing Institutions and of Private Hospitals—both excellent things in their own way, but a little apt to be overdone. Vast numbers of young women are adopting the calling of a sick-nurse as their life-work, and yet it is to be feared that only a small minority of those who enter upon their probation have formed any definite idea of the solemnity of the work in which they are about to engage, of its arduous and exacting nature, its imperious demands upon bodily strength, health, patience, and temper, its dangers and its temptations. *Poeta nascitur—non fit.* In the case of the nurse, the opposite is more nearly true—the nurse is made, not born, although no doubt there is some advantage in a natural predilection and in innate powers of mind and body.

My present theme, however, is not nursing, but the care of the sick, who are not poor in the ordinary sense of the word. And, here again, we are face to face with a latter-day, extravagant development of what every humane thinking man or woman must regard as a real boon to suffering mankind—the Home Hospital. “It is quite certain,” says Sir Douglas Galton,^a “that many persons, even of the fairly well-to-do class, would have much better chances of recovery from either sickness or injury

^a Healthy Hospitals. Oxford: The Clarendon Press. 1893. Page 7.

in a well-administered hospital than in their own homes. This is especially the case with the less well-to-do." Within the past decade, however, there has been in most large towns, and particularly, I think, in Dublin, a veritable mushroom growth of so-called "Private Hospitals." These institutions have been started either by individual physicians or surgeons, or by a few members of the Medical Profession acting in "partnership by deed or otherwise," or by an experienced and fully trained hospital-nurse, or by one or more benevolent ladies without any very special training in sick-nursing. In fact, it seems as though people thought that anyone at all was quite competent "to run" a private hospital, and that so praiseworthy an ambition should be indulged without let or hindrance.

The object of this short paper is, if possible, to show that such a view is a mistaken one—that the institution and administration of a Private Hospital call for the exercise of exceptional mental and bodily powers—are quite incompatible with the practice of the medical profession, which should ever be carried on "in stille Demuth und Hoffnung;" should be subject to inspection by the sanitary—or some other responsible—authority, and should be conducted on sound financial, or, if you will, commercial principles.

Webster's *International Dictionary of the English Language* (London: George Bell & Son, 1890) defines a hospital as "a building in which the sick, injured, or infirm are received and treated; a public *or private* institution founded for the reception and cure, or for the refuge, of persons diseased in body or mind, or disabled, infirm, or dependent, and in which they are treated either *at their own expense*, or more often by charity in whole or in part." This is a comprehensive definition, which includes the class of hospital about which I am now speaking, and the necessity

for which no one would dream of doubting at the present day. To my mind, the term "Home Hospital" is more fitting than Private Hospital, for our object is to provide for the sick a home in the truest and fullest sense of the word; a home, where he will be cared for by skilled hands, under the direction of his attendant physician or surgeon, and amid the best possible surroundings from a health point of view.

Are these last-named requirements fulfilled in most or, indeed, in any of the so-called private hospitals in Dublin? Certainly not. A house, built many years ago, possibly in the last century, situated in a noisy street, and intended for a family residence, is rented or purchased. The exterior is touched up with a coat or two of paint, clean curtains and blinds are put in the windows, the rooms are papered and painted, the drains are inspected, perhaps relaid, the words "Home Hospital" are painted across the hall-door, or else the knocker is taken off, and all clue to the name or description of the occupants is carefully removed, and—hey, presto!—there is our private hospital. Now, what are the external and internal surroundings of the patients?

Outside, in front, is a noisy, dusty or muddy, ill-swept, dirty thoroughfare; in the rear, the windows look out over a narrow strip of town garden, flanked by high and ugly stone walls, fenced in and overlooked by a dingy stable, beyond which are seen endless roofs and chimney-stacks of what are called in London "mews," but what in Dublin are really third-class tenement houses. The jingling bells and grating roar of passing tramcars, street cries, and the hideous discord of mingled vocal and instrumental street music—save the mark!—scarcely cease "from morn to noon, from noon to dewy eve."

Inside, we find a state of things which seriously militates

against the recovery even of a member of a private family who has been stricken by illness while living in an ordinary Dublin residence. No privacy, no chance of quiet or of undisturbed rest. A house 25 or 30 feet in width, flanked by a similar building on each side, the party-walls readily transmitting musical and other sounds or noises, reception-rooms on two landings separated only by folding doors, bedrooms super-imposed in the two topmost stories, every footstep in the uppermost being audible in that which is underneath, the patient's food placed on a table on the landing outside his bedroom, exposed to the dust and contamination of the staircase: *one watercloset*; and, as likely as not, *no bathroom*. Either the patient has to be carried up to the third or fourth story of a house 60 feet high, when he and his attendants will probably be a nuisance to his fellow-sufferers below him; or he will be placed in a front or a back drawing-room, or a front or a back parlour, partitioned off only by folding doors. It has been my lot to attend a gentleman suffering from typhoid fever in a back drawing-room, while another—the victim of nephritis—occupied the front drawing-room, in a first-class private hospital in Dublin. Every sound produced in one room was heard in the other, and there was no such thing as privacy or quiet. On another occasion, messages were repeatedly sent in from another private hospital to the adjoining house to request that piano-playing should be discontinued, as it disturbed a restless patient. Now, such a request would be quite justifiable and reasonable if the illness prevailed in a private family; but I, for one, would pay no heed to it if the illness had been deliberately brought into my neighbour's house posing as a private hospital.

And, now, a word as to the control of these hospitals. Our general and special public hospitals are subject to both

intern and extern control. A managing committee, annually elected by the governors and subscribers out of their own number, meets periodically—every week or every fortnight—and exercises a searching supervision over the administration of the institution. Then, the hospitals which participate in the Parliamentary grant are under the control of the Board of Superintendence of Dublin Hospitals; while those which receive grants from the Corporation are periodically visited and criticised by representatives of that body, which is also directly represented upon the managing committees. Lastly, the Dublin Hospital Sunday Fund exercises a wide-spread and highly beneficial influence over the institutions which participate in the grants from that fund. These hospitals further hold annual meetings, which are widely advertised and are open to the public. At these meetings a report is read, criticised and adopted or amended. So also is a statement of accounts. In a word, the public hospitals are in the full blaze of “the fierce light which beats upon a throne.”

But what of private hospitals? They stand in No Man's Land. There is, as a rule, no managing committee. They enjoy an irresponsible, but reprehensible, freedom from governmental, municipal, or philanthropic control. Their history is unwritten from year to year; their balance sheet is an unknown quantity, sometimes represented by x , more frequently, perchance, by 0. No reliable information is forthcoming as to the nature of the cases which have been under treatment; but it is repeatedly asserted by friends of these institutions that no infectious cases are received or treated, and that, therefore, they cannot be looked upon as a menace to the public health. Yet, are these dogmatic statements to be accepted without question? Surely, tubercular cases are treated in private hospitals—and cases of surgical as well as of medical

tuberculosis. Will not these infect the sick-room? Bacteriological investigation of the dust in rooms at Mentone has revealed the presence in that dust of numerous *Bacilli tuberculosis*. Are our private hospitals more fortunate? Does erysipelas never occur in them? Or septicæmia and pyæmia? Or scarlatina? Or enteric fever? Why, the last-named disease is a fertile source of income year by year to such institutions. Are typhoid stools disinfected or destroyed, or are they allowed to pass, infective as they are, into a possibly defective house-drain or main sewer? Are pocket-handkerchiefs sent to the laundry direct from tubercular patients, or soiled linen from operation cases? None of these breaches of sanitary law may happen; but, if we have no evidence that they *do occur*, we have equally no evidence that they *do not occur*.

What about the construction, ventilation, heating, and cleansing of private hospitals? Sir Douglas Galton aptly observes^a:—"The attention which has been given of late years to the management of sick and injured persons, in connection with the investigations which have taken place into the causation of disease, have led to a considerable development of the practical application of hygienic principles to hospital construction."

He proceeds:—"These general principles of construction may be assumed to be similar under all circumstances. That is to say, in every hospital it is necessary that the building be so arranged that it shall stand on a pure soil; that it shall be supplied with pure water; that it shall be permeated with pure air; and that its cleanliness shall be ensured by abundance of light."

It is clear from this passage that Sir Douglas recognises that an ideal hospital should be built from the foundations, with special reference to the purpose for which it is

^a Healthy Hospitals. Oxford: The Clarendon Press. 1893. Page 12.

intended, although he admits (page 17) that “we meet with hospitals converted from ordinary houses, where a scrupulous attention to cleanliness and the maintenance of a large floor space in the wards have produced satisfactory results.”

Dr. Roger McNeill, in his recent work on “The Prevention of Epidemics and the Construction and Management of Isolation Hospitals,”^a says—“If it is of great importance that healthy sites should be chosen for dwelling-houses intended to be occupied by the strong and vigorous, it is of still greater importance that the site for a hospital should be healthy, as it is intended to be occupied by the sick. Persons in ill health are more susceptible to all deleterious influences than the healthy.”

I venture to make one further quotation. In the Report of the Medical Officer of the Privy Council for 1864, Mr. (now Sir John) Simon wrote as follows:—“That which makes the healthiest house makes likewise the healthiest hospital; the same fastidious and universal cleanliness, the same never-ceasing vigilance against the thousand forms in which dirt may disguise itself in air and soil and water, in walls and floors and ceilings, in dress and bedding and furniture, in pots and pans and pails, in sinks and drains and dustbins. It is but the same principle of management, but with immeasurably greater vigilance and skill; for the establishment which has to be kept in such exquisite perfection of cleanliness is an establishment which never rests from fouling itself, nor are there any products of its foulness—not even the least odorous of such products—which ought not to be regarded as poisonous.”

Enough has been said to vindicate the contention for which I strive, that a ‘Home Hospital’ should be housed in a building especially constructed for the purpose on

^a London: J. & A. Churchill. 1894. Page 88.

an eligible site. It should be a detached building, separated from adjoining habitations by "a zone of aeration unincumbered with buildings, &c., to a distance of twice its height." (Dr. F. J. Mouat and Mr. H. Saxon Snell).^a If possible it should be a one-story building. In an article on the "General Principles of Hospital Construction," Dr. Francis H. Brown, of Boston, Massachusetts, writes^b:—"Private wards should be of a size to accommodate one or, at most, two beds, and a certain number of them should have connecting doors for the convenience of friends or private nurses; separate water-closets and bathrooms, and open fire-places should be provided for each room."

There is no need in this paper to go into details as to the construction of a "Home Hospital;" but I hold strongly that it should be as carefully built as any General Hospital. Its external walls of brick or stone should be two feet thick; its party walls should be fourteen inches thick. Its foundations should be sufficiently elevated to raise the lower floor—if there is more than one story—six or eight feet above the surface of the ground. At this level a four-inch layer of cement should be laid down, the intervening space under the floor being used exclusively for purposes of heating and ventilation (Francis H. Brown, *loc. cit.*). The walls must be damp-proof, faced with either Parian cement or closely-set glazed tiles, or with a layer of soluble glass, as recommended by Dr. Luther.^c The floors should be joined to the walls by a concave moulding, as in the Johns Hopkins Hospital at Baltimore, U.S.A., so as not to allow any angle to exist for

^a Hospital Construction and Management. Part I. 1883. London: J. & A. Churchill.

^b Buck's Hygiene and Public Health. Vol. I. Page 765. New York: William Wood & Co. 1879.

^c Philadelphia Medical Times, November 27, 1875.

the accumulation of dust. They should be made of narrow strips of close-grained hard wood, such as oak or teak or seasoned deal, dove-tailed into each other, or "with matched joints, blind-nailed" (F. H. Brown). The corners of the walls should be bevelled concavely, and there should be also a concave moulding between the walls and the ceiling, which latter should be painted rather than distempered or whitened, unless the white-liming is sufficiently often repeated to maintain the antiseptic properties of the process.

Heating, ventilation, lighting should be on the most approved lines. The sanitary arrangements should be above suspicion. The kitchen and laundry should be kept rigidly apart from the patients' bedrooms and dayrooms; and in a two-story house these departments should be placed in the higher story. Under no circumstances should the drains be carried under the foundations of the hospital buildings.

This is what a private hospital or home hospital should be.

But, lastly, such an institution should be licensed, and freely open to periodical and systematic inspection by the sanitary authorities of the district in which it stands. It should be managed by a committee, the members of which would inspire confidence and command respect, and to which the officials would owe allegiance. Its finances should be controlled by this committee, and a report and statement of accounts should be published at least once a year.

If all this were done we should have private hospitals worthy of the name. And in them persons of refinement and culture might, when suffering from sickness or injury, enjoy the advantages of medical or surgical care and good nursing, together with that privacy and quiet which, in

such cases, so largely conduce to comfort and even to recovery.

It is but fair to state that Mr. Henry C. Burdett, whose work on "Pay Hospitals of the World" is so widely known, was the originator of Home Hospitals. So far back as 1879 he founded the first Home Hospital, Fitzroy House, Fitzroy-square, London, which has prospered greatly and has proved an immense boon to the profession.

DR. FALKINER thanked Dr. Moore for reading his paper, which he had written on very short notice.

DR. MONTGOMERY said it would be very desirable if some mode could be found of giving publicity to the paper.

SIR WILLIAM STOKES regretted that he could not agree with a great deal of what Dr. Moore had said. He had experience of no less than five of these hospitals, and while admitting the importance of having the best hygienic surroundings possible, he did not think that these institutions deserved the very severe strictures made upon them. If they were so bad they would have long since ceased to exist. He had had many important surgical operations in them and never heard any complaints. Many of the largest institutions in London, as St. Bartholomew's and University College Hospital, were situated in densely-populated parts. He did not think inspection did any good, and it would take away the privacy of the hospitals.

DR. PARSONS said they had to make the best of what they had. The patients had far more quietness in these hospitals than in their own homes. He did not think that they should be inspected. If they were not properly kept, doctors would not send their patients to them. These hospitals were very useful for treating patients who were too well off to be treated in an ordinary hospital.

DR. SAVAGE had had some medical cases in a private hospital, and was very much displeased with the treatment they received. There was nothing to be gained by sending medical patients to these home hospitals. He thought Dr. Moore would have spoken more of home hospitals for infectious diseases. During epidemics—as of scarlatina or small-pox—they should charge a reasonable fee

for these rooms, and have whatever doctor the patient wished to attend them.

DR. S. THOMPSON said it would be difficult and expensive to get detached buildings. In some of these hospitals the attendance and nursing was very good, and everything was ready on the spot.

DR. J. W. MOORE, replying, said he granted that these hospitals were a necessity. He wanted them put on a sound financial and sanitary basis. He was speaking to a gentleman a short time ago who was a partner in one of them and he said it did not pay. In London there were no tramcars and there was wooden instead of stone pavement. Quite close to Fitzwilliam-square there were stables let out to car drivers who did not keep them very clean. The vast majority of the cases treated in private hospitals came from the country and were accustomed to fresh air. He said that very soon the sanitary authorities would have to take the matter in their own hands. He could produce positive evidence that these hospitals are a growing scandal.

DR. BERNARD said that there was a strong feeling in the north-west of Ireland that there were too many private hospitals in Dublin. Some of his own patients complained of the noise and insufficient nursing in them.

THE DOMESTIC TREATMENT OF THE INSANE.

By CONOLLY NORMAN, F.R.C.P.;

President of the Medico-Psychological Association of Great Britain
and Ireland.

[Read in the Section of State Medicine, February 1, 1895.]

THE treatment of the insane is a particularly suitable subject for discussion in this Section, inasmuch as it deals with questions not only of medical interest but of great interest to the jurist, and indeed, from a fiscal point of view, of profound interest to all the public.

When I last addressed the Section of State Medicine, my remarks were concerned with this topic. I then drew attention to some of the disadvantages resulting from the treatment of the insane in asylums. These are not very likely to be exaggerated by one who has been twenty years an asylum officer, and who cannot pretend to have entirely raised himself above the influence of the *Idola Specûs*. They are, however, considerable. In the huge asylums which have sprung up or are now springing up everywhere, individual treatment—the one thing likely to benefit our patients—becomes almost impossible. Besides, all patients do not require the discipline of an asylum, and where not needed this discipline and the routine of an institution are, to put it in the mildest way, trying. In my opinion, they are distinctly injurious as well. Here, as in so many other etiological questions, it is not always easy to separate cause and effect. I have heard it maintained by a distinguished alienist that the cause why chronic epileptics are demented is that they have been poisoned by bromide of potassium. This is an exaggeration, and indeed, in the majority of cases, demonstrably

untrue. Neither would it be correct to say that most of the demented in our asylums have become hopeless mental wrecks through the baleful influence of asylum life. But just as there is an element of truth in one assertion, so there is a measure, and I think a larger measure, of truth in the other. The inertia, the indolence, the self-absorption, the lack of all human interest in life which are the characteristics of dementia, are most distinctly fostered by the unhealthy surroundings of asylum society. I have no doubt whatever that many curable cases, when the acute stage is over, are immensely benefited by a change of surroundings. The danger just then is that of allowing the patient to yield to the apathetic tendency which often exists after the defervescence of acute symptoms. This is often best met by restoring him to a life in which he can take an interest. There is a great danger lest, in the dull atmosphere of an asylum, he may grow more and more indolent and timid. He readily falls into a monotonous groove, from which he becomes too apathetic to strive to emerge. Meanwhile, the period during which cure is probable passes away, and our patient figures as a chronic demented. Even for the chronic demented, even for the patient for whom there is no cure, who comes to us, perhaps, without any prospect of recovery, the asylum in many cases has disadvantages, which, in order to counterbalance them, require some such considerations as those arising from some absolute need of the special supervision only to be obtained in an asylum. It is in no wise to be held that all incurable cases of insanity, or all chronic cases, or all cases even of chronic and hopeless dementia, are fit to be at large, and should not be retained in asylums. But a large number do not require the special treatment of an asylum, and could very well be dealt with outside if some provision

could be made by which they would be certain to receive that amount of care which anyone not in the full possession of his intellectual faculties must necessarily require.

There is another point, less interesting to us as physicians, but yet of great importance in dealing with all charities supported by the State—namely, the question of expense. Says Ch. Féré:—"The luxuriousness of asylums has reached such a pitch in certain countries that we feel inclined to ask whether philanthropists, who are responsible for their inauguration (at the public expense, be it observed), have not been contemplating the eventuality of their own individual seclusion in these institutions rather than looking to the comfort of the poor devils who can understand none of this splendour."

It will be readily understood that M. Féré has not seen our Irish asylums, and that the reproach he hints at is not applicable to the "philanthropists" of this country. Nevertheless, in the midst of the luxury provided elsewhere, one does not find that the complaints of loss of liberty are much fewer than they are in our own penuriously-managed institutions. "Let me out; I am wrongfully detained in an asylum," is the universal cry everywhere. Now, I am one of those who hold that you can hardly do too much for the lunatic who is confined in an asylum. The misery of his lot is so extreme that humanity demands that the public, in whose interest largely he is incarcerated, should do all that is possible to relieve him. I think that a good deal of the luxury which excites M. Féré's merriment is exaggerated. It is true that there are in every well-managed asylum many luxuries which are not to be found in the homes of the poor, but it is impossible to make a huge institution like the home of anybody under the rank of an English duke or one of the better-class foreign kings in exile. Therefore it is useless to aim at home-like effects.

An institution remains an institution, and the efforts to make its vast precincts bright and comfortable, wholesome physically and wholesome mentally, must always be expensive. And here arises the fiscal question—"Can any habitation be provided for certain classes of the insane much less expensive than an asylum, and offering, as a compensation for its cheapness, a larger amount of liberty?"

This is the state of the problem. To talk of freedom, as if in an absolute sense, is to go too far. Whatever the enthusiasts for colonisation may say, a boarding-house is not like one's home to anyone save the proprietor, but there is a much closer approximation to liberty and to a natural domestic life in compulsory boarding with a family in one's own grade in society than in the freest existence in an asylum.

How far, then, is the treatment of the insane who are under public care possible in private dwellings? A ready answer will occur to most of my hearers in a reference to Gheel, with the history of which everyone is more or less familiar. But Gheel has been before the public so long that people have grown tired of hearing of it, and a reference to it is commonly met somewhat thus:—"While we must give to Gheel the credit of having maintained for many centuries the traditional practice of treating the insane with an amount of freedom from incarceration unknown anywhere else in the world, and thereby done a great and instructive work, it would certainly seem that the Gheel system is not applicable elsewhere. . . . The very origin of Gheel marks it as a place apart. It had its foundation in the primitive piety of early ages. For at least seven hundred years (the Church of St. Dymphna dates from the 12th century) pilgrimages have been made to Gheel, and the place has been a home for the afflicted. Generation after generation of the people has grown up

to the care of lunatics. The management of the insane has become, so to speak, an hereditary tact with them. This could no more be exported than the other traditions of Gheel."

These words are an extract from a paper which I read here five years ago, on the boarding out of pauper lunatics. I can comfort myself that I am not alone in having given utterance to this absurdity. The same opinion has been expressed a thousand times by others both at home and abroad. A few years ago (1889) the whole subject was discussed by the Société Medico-Psychologique de Paris, and the conclusion arrived at was identical with the above. A Commission of the French Senate more recently advised to the same effect.

Nevertheless, Gheel has been imitated, and imitated with success. It is, therefore, no longer possible to allow this lion to stand in the path. It is probably true that conscious and deliberate imitation of ancient institutions is not as sure a foundation as the primitive custom, out of which the ancient institutions sprung, but the conditions of modern life rarely admit of these slow developments. Be this as it may, *solvitur ambulando*, while theoreticians were discussing the inimitable Gheel, Gheel has ceased to be inimitable, and it turns out that the only great difficulty in imitating Gheel was the common difficulty that exists in every such enterprise—namely, the difficulty of getting people to try.

I have already attempted a description of the methods of Gheel in my former communication above referred to. For that and other reasons it would be superfluous now to dwell on the Gheel system. The interesting point at present is the success of the modern reproduction of Gheel, which is patent and invites imitation.

Gheel is situated in Flemish Belgium, and among the

peasantry of Gheel, who serve as hosts to the lunatics, the Flemish tongue still prevails. This was found very objectionable when patients from the Walloon provinces were sent there. Patients and hosts who spoke different languages could not establish those domestic relations on which the success of the colony depends. Accordingly it was determined to establish, on the lines of Gheel, a colony in the Walloon country. A district in the Belgian Ardennes, in the province of Liège, called from its principal village Lierneux, was selected. The village of Lierneux lies about thirty kilometres south of Spa, and about ten kilometres from Vielsam. There are in the district seventeen other villages, some of which attain the dignity of parishes, having churches of their own and soforth. The whole territory is about equal to that of Gheel in size, but is thinly populated, containing about 2,500 inhabitants. It was designed to plant lunatics to the number eventually of some 1,000 in the houses of the people, after the method of Gheel. Lierneux was selected because it was remote, because it was not traversed by railways or intersected by canals, and because it was supposed that the inhabitants, being poor and without any special industry and supporting themselves chiefly by agriculture, would be glad to accept lunatics as boarders. So they proved eventually, but they made loud protestations when the insane were first sent among them.

In April, 1884, two men and two women were sent from Gheel to Lierneux. They were working patients of the quietest class. The last report which I have been able to obtain only brings us to the end of 1892, at which date the colony contained 349 patients. Of this number 208 were men, and 141 women. Four men and two women were paying patients, the rest were supported by the public. Thirty-eight were counted as curable, and the remaining

311 as incurable. All classes of the insane are admissible to Lierneux, except the suicidal, homicidal, incendiaries, those who are apt to offend against public decency, and those in whom it is necessary to employ continuous mechanical restraint. The last is a class which practically we do not find to exist in this country, but I suppose it will be understood what is meant.

The patients live in the houses of the hosts, mixing freely with them in domestic life, and in the case of the public patients following as far as they are able the trade or calling of the hosts or assisting them in the ordinary labour of the household. For the public patient the State pays 90 centimes per diem to the host in the case of patients who follow a trade, or who work on the farms; 1 franc per diem in the case of those who do not work. The workers, at the date above named, included tailors and needle-workers, shoemakers, carpenters, masons, whetstone makers, blacksmiths, &c., as well as agricultural labourers. The women are chiefly employed at household work and in attendance on the children of their hosts.

The reception of lunatics has become popular among the sane population. Early prejudices were soon overcome, and from the first year the number of applications for patients far exceeded the number of patients ever at the disposal of the authorities. The fact that the admissions steadily increased from 26 in 1884, to 133 in 1892, tells the same story. The administration of the colony is most careful in its selection of hosts, and most painstaking in the supervision bestowed upon the patients, their food, their dwelling places, their cleanliness, and the general salubrity of their surroundings.

During the period of its struggle, Lierneux, among other difficulties, had to contend with the circumstance that there was no proper central hospital, a dilapidated dwellinghouse

in the chief village serving as a substitute. There is now a well-fitted infirmary. In spite of this and many other disadvantages and discouragements which befell the young colony, the results have been amazingly good, especially when one considers what Dr. Deperon points out in his report, that the patients sent to Lierneux from the closed asylums have been of the worst classes, "mostly unhappy beings reduced to a merely vegetative life, idiots on the lowest rung of the ladder, paralytics in the last stage and the like: patients whom up to the present we have felt bound to admit in our wish to people our young colony."

Writing a couple of years ago, Dr. Féré said truly that Lierneux might be definitely looked upon as a success, and that it appears to demonstrate that it does not need centuries to make a Gheel. He drily adds—"In order to make the experiment succeed, it perhaps only needs to find a man whose interest coincides with that of the public, and who may be induced to tackle the subject as if it were his own business."

The example of Lierneux, or perhaps the influence of Dr. Féré, who has steadily pressed this subject, has induced the French to make a remarkable attempt at inaugurating the domestic care of the insane in the colonial form. It has necessarily been restricted to senile demented, as the French law, up to the present, has forbidden the settlement of lunatics under public care in any places except asylums. Senile demented are held somehow not to come under this rubric. Accordingly, Government, on the motion of the Council General of the Seine, has established a colony for senile demented, at the country town of Dun-sur-Auron or Dun-le-Roi, not far from Bourges, in Berry. It seems to be a quiet little town, that has, like many we are so familiar with, seen better days. Its declining population amounts to 4,200. Its iron mines are closed; the phylloxéra has

destroyed its vineyards; there is no special industry, and farming has not been highly developed. Thus it appeared a suitable place, from the economic point of view, while its inhabitants are better fitted than mere peasants to serve as hosts for patients from Paris and its suburbs.

The colony was originally intended for 100 patients, but the number has been recently fixed at 200, and will, there is little doubt, be largely increased. During the first year and a half of its existence (that is, up to August, 1894) 143 patients were received. Of these 13 were sent back to asylums, 6 died, and 1 escaped, leaving at the end of the period in question 123 patients in residence. The capitation cost per diem was 1 franc 94 c., and when the number rose to 200 it was calculated that this would sink to 1 franc 55 c. The capitation cost in the asylums of the department of the Seine varied from 2 francs 90 c. at Sainte Anne, to 2 francs 10 c. at Salpêtrière. Thus a considerable saving could be effected in the maintenance of any large number of patients. There is an infirmary with 20 beds for new comers, for the sick, and for those who prove unsuitable for the colony, till such time as they can be removed to one of the asylums. In the infirmary the physician lives. He visits each of the boarders at the home of the host once a week. The poor old men and women seem to be generally very happy and contented. Few of them express any desire to return to the asylums; they appear to be well cared for; no accident, no scandal has occurred; they do little work, being generally physically unfit for much exertion. It has been justly said of this particular colony that it is a colony not of work but of rest.^a

^a I owe my information with regard to Dun-le-Roi to Dr. Féré's paper, "Le Patronage des Aliénés en France," in the *Revue Scientifique* of August 25, 1894. This able author's "Traitement des Aliénés dans les Familles" (Paris: Alcan. 1893) contains an excellent account of the earlier history of the settlement at Lierneux. He lays down, in an admirable manner, the principles of the domestic treatment of the insane.

The Scotch boarding out method of dealing with harmless lunatics differs from that of Gheel, Lierneux, and Dun-le-Roi, inasmuch as there is no distinct colony, and patients are settled wherever it happens to be convenient to place them. I have gone pretty full into the merits of the Scotch system on a former occasion, and therefore I shall not dwell upon it now, the more especially as I believe the somewhat similar system started recently in Berlin has several points of superiority. Besides, the Scotch system is a very old system, though only thoroughly and well worked up of recent years; the Berlin system is entirely a new growth, and therefore probably more instructive. A very full, detailed, and impartial account of what has been done at Berlin is to be found in a monograph by Dr. Alfred Bothe (*Die Familiäre Verpflegung Geisteskranker*. Berlin: Springer. 1893).

In Berlin, as elsewhere, the authorities were driven to their wits' end by the rate at which the demand for increased asylum accommodation grew. The plan was devised by the authorities of the asylum for the Berlin district at Dalldorf of boarding out a number of patients. The patients are not confined to any one special area: they are scattered all through Berlin and its suburbs. They are boarded, some with relatives, some with strangers; nay, in many cases they are boarded with strangers when their own relatives have refused to take them, and have protested against their discharge. The asylum provides the patient with clothes, and, of course, pays a sum for his maintenance. He is seen at his host's residence by a medical officer of the asylum, at least once in every month, and once in each month—unless in certain exceptional cases—he is required to visit the asylum and be seen by one of the medical officers. Now this is a much better system than that in use in Scotland, where

the unhappy lunatic who is boarded out is seen by no one who can claim to have any particular knowledge of insanity or the insane except the Assistant Commissioner of Lunacy, who visits him once a year. He is, however, visited once a quarter by the parish doctor. The probability may be accepted that the latter visit is of a somewhat perfunctory character.

I am aware that it has been objected to the Berlin practice that it merely provides pretty constant skilled attendance on the patients, and that it does not provide posts for officials who are to inspect him once a year, but I need not point out to this Section that the fortnightly medical inspection by a skilled physician, who has had a full opportunity for careful study of the individual case, is more likely to prove efficient than the most carefully-registered annual visit performed under Act of Parliament.

The facts before us show this. During the year 1891-92, two hundred and fifty-four patients were placed in domestic care; 201 were removed from it. Of the latter number, 107 were sent back to the institution, while 94 became well enough to cease to need supervision and to be removed altogether from the roll of pauper lunatics. Thus it is evident that a liberal use is made of the opportunities for domestic care, and that the experiment of trying how far any particular patient is adapted to it is freely made. Returns to the asylum are comparatively rare in Scotland, but this is due to the fact that few except the quietest class of demented are boarded out in that country. Dr. Bothe truly says: "The oftener we are in a position to place in domestic care patients suffering from severe forms of mental disturbance, the more frequently must the necessity arise for readmission to the asylum on the one hand, while, on the other hand, the more readily we determine to place patients in family care, the better the security is that, as soon as

the domestic treatment becomes evidently impossible, the readmission will again take place without delay and without formality."

Four hundred and fourteen patients were thus provided in the Berlin district during the fiscal year 1891-92, and the number has gone on increasing. The system has been now in existence for close upon ten years, and has worked so satisfactorily that when the new second asylum for the Berlin district at Hertzberge was built it was adopted there as well as at Dalldorf, and now operates from both centres, though the necessity for boarding out which arose from the overcrowding at Dalldorf no longer exists.

The patients are boarded out chiefly among tradesmen and working people. They share in the domestic life of their hosts, and very commonly in their handicrafts.

The economic advantages of the system are considerable. The average annual cost per head of the patients in the Dalldorf asylum for the year 1890-91 was £38 1s.; the cost of the boarded out was £22 2s. The average cost in the asylum in the year 1891-92 was £38 6s.; of the boarded out, £21 19s.

In conclusion, it may be said—

(1.) That the organised domestic care of the insane is shown by recent experiences in Belgium, France, and Germany to be capable of an extension not heretofore conceived possible.

(2.) That it can be undertaken without traditional advantages, and even under circumstances formerly looked upon as unfavourable.

(3.) That if it could be adopted in this country, under such limitations as local circumstances may require, it might prove not only beneficial to the insane but a source of considerable saving to the public.

I cannot but think that in Ireland peculiar facilities

exist for working out a system of family care of the insane. Our people are kindly disposed towards the afflicted. They are very domestic in their habits, and many of them are unfortunately poor enough to be very willing to undertake any honest method of assisting themselves in the struggle for existence.

DR. ROCHE said that if the experiment of boarding out pauper lunatics was to be tried, it could not be tried in a better place than in Ireland. The boarding out of pauper children had already proved a great success. The poor people had the reputation of being exceedingly kind to the young and to the afflicted. He thought, on the other hand, that if the patients were badly treated they would be afraid to complain to the inspectors.

DR. S. M. THOMPSON remarked that as far as his experience in workhouses went, he found the healthy inmates very cruel to the insane. If a patient was fit to be sent to the healthy yard they drove him to madness again.

DR. DONNELLY said that Dr. Thompson's statement was really an argument in support of Dr. Norman's paper. He had found that the friends and even the neighbours of harmless lunatics did their best to keep them at home, and it was only when they became dangerous that they were sent to an asylum. This was his experience both in town and country.

DR. BAKER thought that if the experiment were to be tried the lunatics would have to be classified into the harmless and dangerous patients; of course only harmless patients would be boarded out. Imbeciles were kindly treated by their friends. Another objection to the experiment might be that the Boards of Guardians might not consent.

DR. NORMAN, in reply, explained that time prevented him from entering on the question of classification. If the experiment is to be a success the greatest care must be taken in the cases sent. Much harm to the insane and to the system might arise if unsuitable cases were drafted out to the so-called insane colonies. On account of the better supervision he preferred the system as worked in Berlin to that in Scotland. As regarded the difficulty about hearing complaints, he said that this difficulty exists, he feared, to an even greater degree in asylums. The hosts of the

patients would be interested in preventing things going wrong, and it would be to their advantage to keep their patients alive and in good health as long as possible. The sum paid them would, to people in their station, be of importance. Concerning the rebellion of the neighbours, this is a thing that has always been talked about. Even when an asylum is about to be built they threaten to leave the district, but when they find that it brings a good deal of money into the place they remain there. Ireland, he thought, would be a favourable ground for the experiment, as it abounded in small holdings, and the people, on account of the payment, would be glad to receive patients. The poor of the Irish race he believed to be kind to those in distress. It is among the "respectable" classes that cruelty to the insane exists: both in the form of a desire to hide the supposed disgrace of insanity in their own families and in the feeling that the insane of the working orders, who are necessarily supported at the public cost, are merely an expensive and troublesome class of "paupers."

THE NEED FOR WOMEN AS POOR LAW GUARDIANS.

BY E. WINIFRED DICKSON, M.B., B.CH., B.A.O., R. UNIV.;

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[Read in the Section of State Medicine, February 1, 1895.]

I HOPE that the subject of my paper will not be considered outside the scope of the Section of State Medicine. The position and difficulties of doctors who are serving the State under the Poor Law Acts have often been discussed here, and as my subject concerns the composition of the Board which appoints the dispensary and workhouse doctors, and which controls the management and nursing of the workhouse hospitals, I think it may fairly lie within our province. In England, under the Poor Law Amendment Act of 1834, there is no technical disqualification on the ground of sex to prevent women serving on Boards of Guardians, and yet for forty years after the passing of the Act no woman presented herself for election. Under the stimulus of the wider outlook which more advanced education gave them, women looked abroad for fields of usefulness and work beyond their own immediate homes, and in 1875 a woman came forward as a poor law guardian in Kensington and was elected. Since then the number of women guardians has increased at every election. In 1887 there were 50, and this year there are over 800. Their work has received the unqualified approval both of the ratepayers and the Local Government Board, and anyone who has followed the recent series of articles in the *British Medical Journal* on English workhouses will have

observed that even that conservative journal notes the benefit of having women on the Boards.

In Ireland the Acts relating to Poor Law administration are different from those of England, and the fundamental Act—that of 1838—contains the words “male person” in the description of the qualifications of a guardian. This expression was probably inserted quite inadvertently; it had not then dawned upon the minds of law-makers that women might want a share in administration. Standing as it does, however, it of course excludes women absolutely until a short amending clause can be put through Parliament, and in the press of other business it is very difficult to get that done. Several attempts have been made to pass such a clause. Last year a bill was introduced by a Unionist member and was supported by nearly the whole Nationalist Party, but one member blocked it and it failed to become law. When one examines the duties of guardians it seems extraordinary that women should only of late years have taken up the work in England, and that they are not allowed to serve in this capacity in Ireland, for the management of the workhouse is in a very large measure a matter of household management, such as every woman is accustomed to perform or supervise in her own home. The average man does not pretend to be able to do housekeeping on a small scale—to look after the cooking of the food, the cleaning of the house, the clothing of the children, &c., that is usually conceded to lie outside his sphere. But incompetence to manage a small household seems to be a qualification for the post of managing a large one, contrary to the usual rules in such cases.

Among some of the duties which Boards of Guardians have to perform, and in which surely they would find a woman's knowledge of service, are the following:—

(1.) Engagement of officials, the majority of whom—matron, nurses, and servants—are women.

(2.) Superintending the quality of the material and the making of the clothes for the women and children.

(3.) Inspection of the supplies sent in, to see that they fulfil the contract requirements, and inspection of the food, to see that it is properly cooked and served.

(4.) Inspection of the infants and children, to see that they are well fed and cared for.

(5.) Inspection of beds, bed linen, and towels.

All these matters a woman is accustomed to see to as a matter of routine in her own house, and she is trained to notice them, and if they are badly done to have them set right. It is no question of special professional training, it is a question of using the training and habits of home in a wider field and on a larger scale; the essentials are the same. It is often said that women are unbusinesslike, and this might be urged as an objection to their undertaking the more extensive work of a guardian, but business habits are largely a matter of training, and most women who have to organise and manage their households have a very fair idea of business in their own line at least, though they may not understand stocks and shares. They are also often more economical than men, because they are accustomed to deal with smaller sums of money. Besides, it is not proposed that any Board should be entirely feminine—I believe in the co-operation of men and women here as elsewhere; what I wish to urge is the very great need for one or two women on each Board to assist and give advice in matters concerning the women and children and domestic affairs. And as I believe that nearly four-fifths of the paupers are women and children, this does not seem a very unreasonable proposal. As examples of what women have done as guardians in England during the last 20 years, I may instance the following points:—

(1.) Investigation into the clothing of the women and children. The women were found in many cases to wear

the same clothes in all seasons of the year, and suffered greatly from the cold in winter. The children too were often insufficiently and uncomfortably clad.

(2.) In many cases the workhouse school has been abolished and the children are sent to the nearest Board school and allowed to play and mix with the children there, in order that they may be as free from pauper associations as possible. This has everywhere been found to be of the greatest advantage to the children physically and mentally, besides saving the cost of a separate school.

(3.) Pocket handkerchiefs have been provided for the inmates, adults, and children. This is not a very extravagant or luxurious addition to their toilette requisites, but it is one which is still lacking in many workhouses, and though it is a small matter, on the score of cleanliness, at least, it seems desirable.

(4.) Careful supervision is carried out concerning the facilities for washing, and provision made that each person should have fresh water and a separate towel. Inspection is made of the women's baths and sanitary conveniences.

(5.) Frequent inspection is made of the nurseries to see that the infants' bottles are kept clean and the children well looked after. Old pauper women are found as unsatisfactory for this work as in workhouse hospitals, and in several places paid attendants have been substituted.

(6.) Properly trained nurses for the hospitals are being gradually recognised as absolutely necessary, and in several cases the lady-guardians have been instrumental in bringing about this change. They also supervise the nurses' rooms, and see that they have good food, open-air exercise, and holidays at suitable times.

(7.) In many of the cases concerning women which come before the Board, such as that of the unmarried girls who have been recently confined in the hospital, the women-

guardians have done good work in assisting them to employment where they can redeem their characters, or putting them into communication with charitable institutions where they can be trained. In some of the larger Boards these questions are relegated to a sub-committee of ladies.

(8.) Boarding-out or emigration of children, and proper inspection of them when boarded out, have also been taken up recently by the women, as well as inspection in asylums of female lunatics sent from the district.

(9.) Also the supervision of the training of the girls for service, and finding suitable situations for them when ready, not merely sending them to the first place that offers, is work that the women-guardians do.

While some of the above reforms represent increased expenditure, the women have been able to exercise economy in other matters so as to have the paupers better treated and with less expense. In the matter of the able-bodied male paupers and tramps, however, it has been noted on several Boards that the women-guardians incline to making treatment even more severe and deterrent than it is. Their sympathies are not with this class, but with the sick, the aged, and the children.

For all these matters a great deal of individual attention to the cases and the household details is necessary, and that is another point where the value of women as public servants in this capacity comes in, as the women who devote themselves to the work have generally a good deal of leisure. The men who are guardians have not the necessary time to give to these matters, even if they possessed the intimate knowledge of the points mentioned that women have.

It is often laid to women's charge as a fault, that they cannot take a broad and extensive view of a subject—they cannot see the wood for the trees. But this characteristic is a virtue here, for it is only by personal attention to

individual cases that success in the administration of the poor laws can be obtained. It is shown clearly by the revelations about barrack schools, for instance, and other large institutions, that no system and no regulations, however carefully framed, are successful in dealing with masses of people, unless wisely and conscientiously and kindly carried out. In the circular issued recently by the English Local Government Board, this is strongly emphasised in the following words:—"All experience shows that whether a workhouse is well or ill-administered depends to a large extent on the personal interest which the guardians take in the matter." This circular is described by an English paper as "The Pauper's Charter," and it certainly marks the change in people's ideas compared with former times as to the way the destitute poor should be treated. Women-guardians have also done a great deal towards humanising the workhouses by having the wards brightened with pictures and flowers, by providing toys for the children, and interesting easy employment for the old people in connection with the Brabazon scheme. In many of these alterations women have called in the assistance of various charitable societies, so that the schemes of private and State benevolence co-operate instead of overlapping.

Surely if women have found so much work to do in English workhouses, and have been able to do it with considerable success, there is also work for them to do in Ireland if they were allowed to try, and I believe that suitable women could be found in most of the districts. It is a post for which tact and judgment and sound common sense are required, as well as plenty of time to devote to the work, and there would, of course, be initial difficulties, but they are not insurmountable. The question of religious differences would probably come into this as it does into everything in Ireland, and I believe there have been unfortunate instances of

injudiciousness on the part of some lady-visitors to work-houses. But women-guardians would differ from the visitors in being elected by the ratepayers, not arbitrarily appointed, and they would be publicly responsible for their actions. I believe the fact of public responsibility would make all the difference, and women have too long been allowed to use the dangerous tool of influence without responsibility.

The State takes upon itself the duty of caring for the destitute both in health and disease, and medical science is advancing more and more every year along the lines of prevention rather than cure. In the furtherance of these aims I believe the doctors who work under the Poor Law would find women-guardians strong allies in all matters of sanitation and hygiene as well as nursing.

DR. ROCHE thought that the election of ladies to this post might cause more human sympathy to be indulged in towards the young and the old feeble inmates of workhouses. He had no sympathy at all for the able-bodied inmate and the tramp.

DR. DELAHAYDE said that the Acts relating to the Poor Law system were passed nearly half a century ago; that during this time the country had changed, and that they were now unsuitable. They bore eloquent testimony to O'Connell, who prophesied that it would bring about the demoralisation of the country. He considered that the Boards of Guardians had also degenerated. Their members were not now the broad-minded and educated gentlemen who used to sit on them. The present members paid very little attention to any suggestion from their medical officers, and tried to repress them whenever they get a chance. Since he had listened to Miss Dickson's paper, he viewed in a much more favourable light the election of lady guardians.

DR. NORMAN said he thought that the power should be given to ladies to serve as guardians. There was little doubt but that it would be greatly to the benefit of the poor. It would also be more easy to manage the female officials if there were lady guardians.

DR. DOYLE briefly expressed his approval of Miss Dickson's paper and his sympathies with the substance of it. He thought the Poor

Law system needed to be completely amended to get rid of the jobbery at present existing in it.

DR. S. M. THOMPSON said that he had found that the present members of Poor Law Boards frequently gave more time to their work than their wealthy predecessors. They had, of course, a very poor idea of the position of their medical officers, but with time and experience this would improve. There was no doubt about the frightful amount of jobbery that existed in some workhouses. He had also met with some glaring instances of a matron treating with shameful leniency an untrustworthy female assistant.

DR. POTTER said he agreed with Dr. Dickson that it would be an immense advantage to country workhouses to have lady guardians. He was on the committee of a Dublin hospital on which there were some ladies and gentlemen. He found that in many points the ladies were able to be of much more use than men.

DR. DICKSON, in replying, stated that she hoped the present Poor Law system would soon be abolished, but that in the meantime she thought some amelioration of the system would be of much service. The English Boards of Guardians will probably soon be merged in the Parish Councils. A workhouse matron, if she were of the right sort, would be very glad to have lady guardians with whom she could consult.

ON THE TOPOGRAPHICAL ANATOMY OF THE PANCREAS, WITH REMARKS ON THE ARRANGEMENT OF ITS DUCTS.

By JOHNSON SYMINGTON, M.D., F.R.S.ED.;

Professor of Anatomy, Queen's College, Belfast.

[Read in the Section of Anatomy and Physiology, February 1, 1895.]

SINCE the classical paper of His, entitled "Ueber Präparate zum Situs Viscerum mit besonderen Bemerkungen über die Form und Lage der Leber, des Pancreas, der Nieren und Nebennieren, sowie Weiblichen Beckenorgane" which appeared in the *Archiv für Anatomie* for 1878, no further contribution, so far as I am aware, has been made to our knowledge of the topographical anatomy of the pancreas. Not only do we find in all our anatomical museums the series of excellent models which His had prepared from casts of hardened specimens in illustration of his observations on the form and position of the abdominal viscera, but his description of the pancreas, &c., has been incorporated into nearly all our text-books.

During the Winter Session, 1893-4, I hardened, in several subjects, the abdominal and thoracic viscera in situ by the method adopted by His—viz., the injection of the body from the femoral artery with a $\frac{1}{2}$ to 1 p. c. solution of chromic acid, the femoral and jugular veins being opened to facilitate the circulation of fresh fluid through the vessels. The results obtained from the examination of the pancreas in these specimens have led me to adopt in some respects a different description of the pancreas from that given by His. Fig. 1 represents the anterior aspect of one of my hardened specimens. It is reduced by photography from a life-sized drawing for

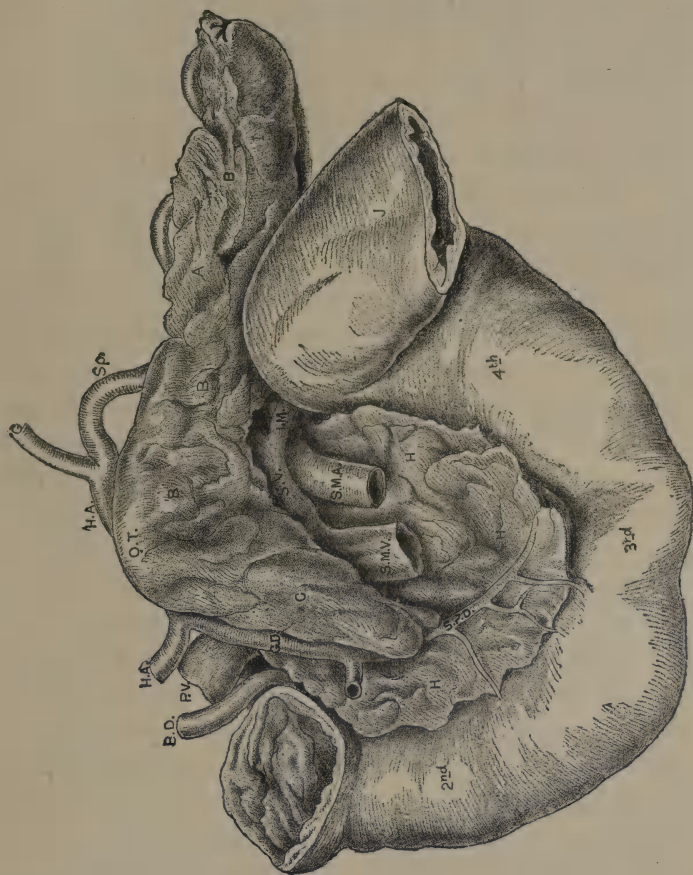


Fig. 1.—Anterior aspect of the pancreas. Drawn by G. C. R. Harbinson, from a specimen prepared by hardening the abdominal viscera in situ by the injection of a 1 p.c. solution of chromic acid.

H.H.H., head of pancreas ; C., its neck ; B.B., its body ; A., anterior surface of the body ; I., its inferior surface ; O.T., omental tuberosity near right end of body ; 2nd, 3rd, 4th, corresponding parts of the duodenum ; J., jejunum ; H.A., hepatic artery ; G., gastric artery ; S.P., splenic artery ; G.D., gastroduodenal artery ; S.P.D., superior pancreaticoduodenal artery ; S.V., splenic vein ; I.M., inferior mesenteric vein ; S.M.V., superior mesenteric vein ; P.V., portal vein ; B.D., bile duct.

which I am indebted to one of my pupils, Mr. G. C. R. Harbinson. All anatomists agree in describing an enlarged right extremity or head, but they are by no means at one as to its limits. I would restrict the term *head* to the disc-shaped mass (see fig. H.H.H.), flattened from before backwards, and lying in the concavity formed by the 2nd, 3rd, and 4th (Treves) parts of the duodenum. Its transverse diameter is generally about $2\frac{1}{2}$ inches in extent, and its vertical diameter about the same. It is, of course, liable to vary according to the condition of the duodenum, but as the three parts in contact with it are tolerably firmly fixed in position, its range of variation is not great. The left portion of the head which passes behind the superior mesenteric vessels towards the terminal part of the duodenum, is often described as the lesser pancreas. I have never seen it separated from the rest of the head. The gastro-duodenal and superior pancreatico-duodenal arteries pass down in front of the head, and it may be noted that the latter vessel does not, as generally stated, lie in the groove between the head of the pancreas and the second part of the duodenum, but about half an inch or more internal to it. From the upper part of the anterior surface of the head and nearer its right than its left border arises the *neck*. This passes upwards, forwards, and to the left to join the right end of the *body* of the pancreas. At its attachment to the head, the neck is grooved on the outer side by the gastro-duodenal and upper part of the superior pancreatico-duodenal arteries, while immediately to its inner side is placed the upper end of the superior mesenteric vein and the origin of the vena portæ. In its course towards the body the neck passes in front of the lower end of the portal vein, and its right side is in relation with the pylorus and the commencement of the duodenum. Testut^a is one of the few authors who describes a neck,

^a Traité d'Anatomic Humaine. Tome iii., p. 667.

yet it is a convenient term by which to designate the part of the gland compressed between the portal vein and the first part of the duodenum. The neck is markedly constricted as compared with the head, while its direction forms nearly a right-angle with that of the long axis of the body of the pancreas. The upper and anterior part of the right end of the body sometimes forms a well-marked prominence, called by His the *tuber omentale*. He includes under the head what I have described as forming the right end of the body, the neck, and the head. The right part of the body is connected with the head merely by the constricted part termed *neck*, and the portal vein is not entirely surrounded by the pancreas, but lies in a deep groove in the gland open towards the left side. The neck and adjacent part of the body are, in relation with the pyloric end of the stomach and the beginning of the duodenum, parts of the alimentary canal liable to frequent physiological alterations in size and position. In the specimen shown in Fig. 1, the stomach was distended, and the pylorus rested against a depression on the antero-lateral aspect of the neck, and apparently pushed the adjacent part of the body upwards and to the left, so as to form a well-marked omental tubercle. This tubercle varies considerably in the degree of its prominence, and, as a rule, I believe it will be found much more distinct when the stomach is distended than when it is empty. The three surfaces of the body of the pancreas described by His are all well marked in my specimens to the left of the median plane. In one of them, in which the convolutions of the upper end of the jejunum were distended, the inferior surface was fully as large as the anterior.

Ducts of the Pancreas.—In nearly all the English text-books on anatomy a full account is given of the course of the main pancreatic duct, or duct of Wirsung; but the existence of the accessory duct of Santorini is either ignored,

or its position and relations are incorrectly described. A duct is commonly referred to as coming from the lesser pancreas, which it is said may open separately into the duodenum. In only one English text-book, that of Macalister's, is the accessory duct distinctly described as opening into the duodenum *above* the duct of Wirsung. When present it arises from the main duct at the neck of the pancreas, and passing to the right opens into the duodenum about an inch above the common orifice of the bile and main pancreatic ducts. According to the extensive observations of Schirmer,^a with which my own more limited ones agree, the accessory duct is present in a considerable majority of cases, and in more than half it opens into the duodenum. The method recommended by Schirmer for demonstrating the number and position of the openings from the ducts of the pancreas into the duodenum will be found very convenient. He exposes the main duct near the tail of the pancreas, and passes a blow-pipe into the duct in the direction of the duodenum. If the duodenum be now opened, the entire preparations placed under water, and air forced into the duct by the blow-pipe, the duodenal openings will readily be detected by the air bubbling through them into the water.

Recent observations on the development of the pancreas have shown that the so-called accessory duct is entitled to more general recognition in English text-books than it has hitherto received. Thus Zimmermann and Hamburger have demonstrated that in the human subject the pancreas is formed from two distinct outgrowths from the wall of the duodenum. One of these, the smaller, is in close relation with the duodenal end of the common bile duct; the other, which is situated nearer the pylorus, is much larger, and forms the greater part of the pancreas. About the sixth week of embryonic life the two processes join, and their

^a Beitrag zur Geschichte und Anatomie des Pancreas, Basel, 1893.

contained ducts subsequently communicate with one another. The portion of the upper duct on the duodenal side of the point of union usually grows less rapidly than the lower duct. It becomes the accessory duct, or duct of Santorini, while the lower duct with the distal portion of upper one forms the main channel for the pancreatic secretion, and is generally known in the adult as the main pancreatic duct, or canal of Wirsung.

PROFESSOR CUNNINGHAM said that there were two ways by which the topography of an organ, such as the pancreas, could be made out—(1) By injecting hardening solutions into the blood vessels. (2) By frozen sections. Up to the present the topography of the pancreas had been known only by His's model. Professor Symington's model had been prepared in the same way as His's. He himself had only studied the pancreas in one frozen section, and in it the form of the pancreas was much nearer the pancreas of Symington than that of His. All abdominal organs, however, are subject to great variations in form.

PROFESSOR SYMINGTON thought that the pancreas was more easily investigated by the chromic acid method of His than by frozen sections. He did not wish to assume that the pancreas always takes the form that it has in his model. The neck part of the head was subject to considerable variations due to the movements of the pylorus.

ON THE FORM OF THE SPLEEN AND THE KIDNEYS.

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[Read in the Section of Anatomy and Physiology, May 31, 1895.]

Two methods have been adopted by anatomists with the view of obtaining an accurate knowledge of the true form of the solid viscera of the abdomen. By the first of these the organs are hardened *in situ* by an injection of from five to ten litres of a $\frac{1}{2}$ per cent. or a 1 per cent. solution of chromic acid under a given pressure. This is the method which was employed by Professor His^a in the preparation of his now celebrated models, the production of which has, in many respects, revolutionised our ideas upon the topographical anatomy of the abdomen.

By the second method the organs are built up by a process of reconstruction. A suitable subject having been selected, it is in the first instance frozen. The trunk is then divided by means of a saw in the sagittal direction into eight slabs of nearly equal thickness by seven sections. The slabs thus obtained are hardened, care being taken to insure a uniform shrinkage of the different viscera. When the necessary consistence is attained the different pieces of a given organ are removed from each slab in turn, cast in plaster of Paris, and then modelled in soft wood. When the various parts are completed they are fitted together, and the organ is thus

^a Wilhelm His. Über Präparate zum Situs Viscerum mit besonderen Bemerkungen über die Form und Lage der Leber, des Pancreas, der Nieren und Nebennieren sowie der weiblichen Beckenorgane. Arch. f. Anat. und Entwick. 1873. P. 53.

reconstructed. It is obvious that this method is calculated to give very accurate results, although it is also evident that a source of error is apt to creep in through the loss of substance produced by the various saw-cuts. The amount of this loss, however, can be estimated, and in the wooden models added to both surfaces of the different pieces of a given organ. One marked advantage which the reconstruction method possesses consists in the fact that by the lines of union of the separate pieces we obtain very accurate information regarding the topography of an organ so reconstructed, seeing that the sections are made along certain well-established planes.

Of course the great disadvantage of the reconstruction method is the immense amount of labour which it involves. For my own part I may say that it would have been impossible

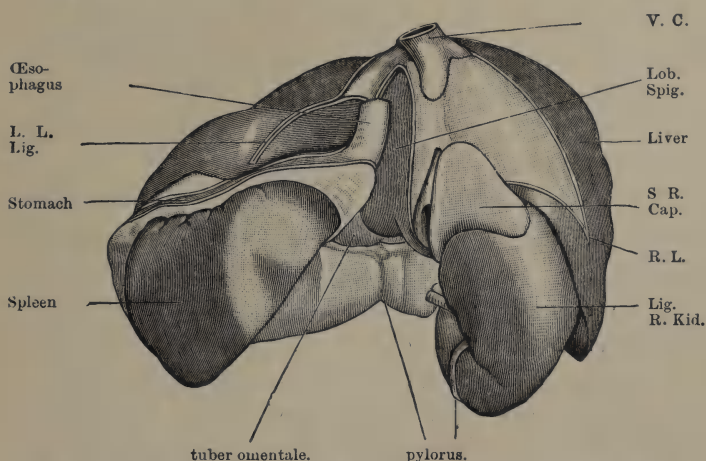


FIG. 1.—Model, produced by the reconstruction method, of the liver, right kidney, stomach, and spleen of a child.

for me to have undertaken it had it not been for the assistance which I have obtained from my working assistant, Mr. John Stirling, who is a trained and exceptionally skilful wood-carver. In conjunction with him I have reconstructed the

liver of an adult male, and the liver, stomach, kidneys, and spleen of a female child. This work was completed about two years ago, and the originals were placed in the hands of Messrs. Casciani & Co., in order that they might supply duplicates to those anatomists who might desire to have them. The form, however, which was obtained for the kidneys, and more especially for the spleen, differed so markedly from that exhibited by the models of these organs produced by Professor His that I was unwilling to publish my results until I was assured that I was not dealing with individual peculiarities.

During the last few months I have had an opportunity of checking my results by the injection method. In all I have hardened three adult subjects—two well-formed females and one male. In the first two of these I employed Müller's fluid followed by graduated spirit injections. In the case of one of the subjects (A) the injections were repeated almost daily for a period of two weeks, whilst in the other (B) the hardening process was continued for fully six weeks. The third subject, at the suggestion of my assistant, Dr. A. F. Dixon, I injected with a saturated solution of chloride of zinc followed by spirit, but although this method in his hands has afforded excellent results in the case of the advanced fœtus, it was found unsuitable for the larger organs of the adult. The viscera which I have obtained from these specially-prepared subjects have satisfied me that our present description of the pancreas, spleen, and kidneys requires some modification, and that the models which had been obtained by the reconstruction method exhibit what may be considered to be the natural form of the organs.

On the present occasion I do not intend referring to the pancreas except incidentally. A few months ago Professor Symington read a paper before the Anatomical Section of the Royal Academy of Medicine in Ireland upon the form

of this organ.^a The remarks which he then made I can corroborate in nearly every particular. Professor Birmingham has also given some attention to this matter, and I understand that it is his intention to publish shortly some additional observations on the pancreas. His results, so far as I know them from conversation with him, also agree with what I have noted in the course of my investigation.

The two livers which I have reconstructed show many interesting points from the fact that they present two extremes in the changes of form to which this organ is subject from the modelling effect of surrounding viscera; one was obtained from an emaciated adult male, in which the hollow viscera were absolutely empty and the anterior abdominal wall greatly retracted. The organ is flattened from before backwards to such an extent that its inferior surface is almost brought to lie in the same plane as the posterior surface.

The model of the child's liver presents just the opposite condition. The colon was greatly distended and had exercised a strong pressure in an upward direction upon the stomach and the liver. The vertical depth of the liver is thus greatly reduced, and the different surfaces of the organ are all marked off from each other with the greatest precision. The slight modification of Professor His's description proposed by Professor Symington is therefore particularly applicable to this form of liver.^b

It is to the form of the spleen and kidneys, however, that I desire specially to call attention in this communication.

Spleen.—Professor His, in the article already quoted, makes very brief reference to the spleen. He alludes to Luschka's account of the organ, and merely remarks that "the adaptation of the spleen to neighbouring viscera is known, and by

^a This paper will be found at page 434.

^b Johnson Symington. On certain Physiological Variations in the Shape and Position of the Liver. Trans. Med. Chir. Soc. Edin. 1887.

the designation of its three surfaces as superficies gastrica, superficies renalis, and superficies phrenica, sufficiently indicated." We are therefore obliged to turn to his model of the organ to obtain an idea as to the conception he has arrived at regarding its form. This model has been very generally taken as a type, and the majority of our descriptions

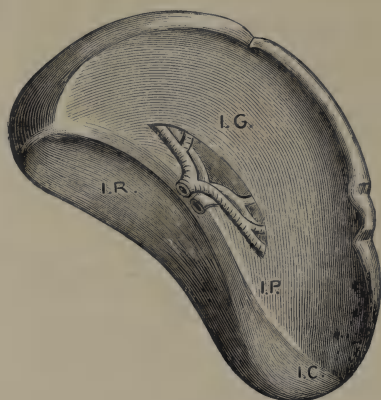


FIG. 2.—From the model of the Spleen, by Professor His. I.G., superficies gastrica: I.R., superficies renalis; I.P., area of contact with pancreas; I.C., superficies colica.

of the spleen have been framed from it. It represents the spleen as an oval organ, narrower at its lower than at its upper end, and with both of these extremities somewhat pointed. Its visceral aspect is divided by a salient ridge into an anterior gastric concavity which is adapted to the fundus of the stomach, and a posterior deeply hollowed out narrow renal surface which fits closely upon the convex outer margin of the kidney. The tail of the pancreas is in apposition with the lower part of the gastric concavity, but there is no impression on the spleen to mark the place of contact. The lower end of the spleen rests upon the summit of the splenic flexure of the colon.

I have not met with this form of spleen in any of the

subjects I have specially prepared in the prosecution of this investigation, and whilst I would be slow to insist that such a form does not exist, I have no hesitation in saying that it is not the usual nor is it the typical form of the spleen.

The spleen has the shape of an irregular tetrahedron, with its apex above and its base below. The upper extremity, which may be regarded as representing the apex, is directed inwards and upwards. It is curved to some extent forwards in itself, and not infrequently it exhibits a slight spiral twist in an outward direction. Of the four surfaces the most extensive is the *superficies phrenica*, which is adapted to the concavity of the diaphragm, and which, as Luschka has pointed out, corresponds in position to the 9th, 10th, and 11th ribs. The remaining three surfaces are turned towards the cavity of the abdomen, and are closely applied to the neighbouring viscera. These three surfaces meet at a blunt, but usually very conspicuous prominence, which may be termed the *internal basal angle*. From this, as from a centre, three ridges radiate. One salient and prominent (the *margo intermedius* of Luschka) ascends to the apex or upper extremity, and separates the gastric from the renal surface; a second short ridge passes backwards to the posterior basal angle, and intervenes between the renal and the basal surfaces; whilst the third ridge, less distinctly marked, proceeds forwards to the anterior basal angle, and separates the gastric and the basal surfaces from each other. The two last-mentioned ridges, together with the lower border of the organ, map out a very evident triangular area, which may be distinguished as the basal surface (*superficies basalis*).

The *gastric surface* (*superficies gastrica*) is deeply concave, and is moulded upon the fundus of the stomach. Within its area, about half an inch to the outer side of the *margo intermedius*, is situated the hilum of the spleen. The *renal surface* (*superficies renalis*) is not concave, as a rule, but flat and

even. It varies considerably in extent, and is applied to the anterior surface of the upper part of the kidney, close to its outer border. The *basal surface* is smaller than the other two visceral surfaces. It looks downwards and inwards, and it has the tail of the pancreas as a constant relation. The area of contact with the pancreas is subject to considerable variation, and in many cases a marked pancreatic depression may be observed on the spleen. The pancreas stretches across the front of the left kidney, and supports the base of the spleen in a shelf-like manner. As is well known, the

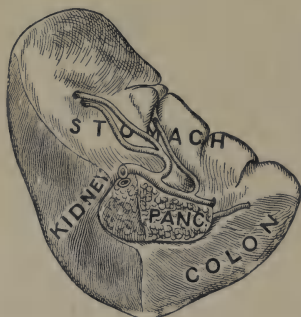


FIG. 3.—From the model of the spleen of a child, obtained by the reconstruction method. It exhibits the typical form of the spleen.

tail of the pancreas does not present an equal development in all subjects. In cases where it is well marked it is folded backwards upon itself, as it lies in relation to the base of the spleen, and may even reach the lateral wall of the abdomen at the level of the 11th rib. The portion of the basal surface of the spleen which is not in apposition with the pancreas presents a varying relation to the colon.

The anterior border (*margo crenatus* of Luschka) and the posterior border (*margo obtusus* of Luschka) of the spleen call for no special remark, but it should be noted that the organ presents a well-marked lower border, which stretches from the posterior to the anterior basal angle, and intervenes

between the basal visceral surface and external phrenic surface. A very characteristic feature of the typically formed spleen is the great prominence of the anterior basal angle. This constitutes a striking projection, which appears to be more strongly marked in the foetus than in the adult. Luschka calls attention to it, and speaks of it as the "spitzer Winkel" of the lower end of the spleen. It forms the most anteriorly placed part of the organ.

There is abundant evidence to show that the form of spleen which I have described is the true and natural form. It is the shape which I obtained in the model produced by reconstruction, and also in each of the subjects which were specially hardened. Dr. A. F. Dixon has also observed precisely the same shape of spleen (but in a more decided form) in three advanced foetuses (Plate, Fig. 1). But the morphological evidence is still more conclusive. In the Bonnet monkey (Plate, Fig. 2) and the baboon the tetrahedral form of the spleen is most marked. The same surfaces, as in the human spleen, can be detected, but these are narrower, and the organ tapers more rapidly towards the upper end. In the orang all the markings present in the human spleen can be detected, and the general outline is very much the same.*

But there is another aspect of the question which is not without interest. My assistant, Dr. A. F. Dixon, in discussing the matter with me, pointed out that when an organ is packed into a more or less spherical cavity it will occupy the smallest amount of space consistent with its bulk if it assumes the tetrahedral form. If we regard the spleen from this point of view, then we must look upon the diaphragmatic

* It is right to state that I have only had an opportunity of examining the spleen of one orang, and this was enlarged and in a pathological condition. Still its general resemblance to the human spleen was most marked. In the chimpanzee the spleen is very long and narrow, and resembles, in this respect, the same organ in the baboon. It is, however, distinctly tetrahedral in form.

surface as representing the mathematical base and the so-called internal basal angle, as where the three visceral surfaces meet as the apex of the tetrahedron.

But it may be asked: In the many figures of the spleen which have been published are there none that represent the organ correctly? When we examine a number of text-books of anatomy, it is, indeed, as interesting as it is remarkable to note the many different and sometimes extraordinary shapes which the spleen is made to assume.^a The only author, so far as I am aware, who gives a satisfactory figure is Luschka.^b It is true that his description differs from mine, but then he looks at the organ from a different point of view.

It is right also that I should refer to a very beautiful model which I have received from my friend Dr. Goubaroff, of the Anatomical Department of the University of Moscow. This represents the under surface of the diaphragm and the posterior wall of the abdomen after the removal of the stomach and intestine. It is the most exact and instructive model of the kind with which I am acquainted. In this, the form of the spleen is seen to be precisely the same as that which I have obtained in my specimens; and further, the relation of the pancreas and the backward fold of its tail are exhibited with great accuracy.

Kidneys.—Prior to the publication of Prof. His's article, the majority of anatomists were content in describing the kidney, to call attention to its general bean-shaped form, and to point out that while both surfaces are convex the anterior is fuller and more rounded than the posterior. Some, indeed—as, for example, Luschka—have asserted that surrounding

^a Professor His has called attention to the fact that the figure of the liver given by Vesalius is in some respects more accurate than many more modern illustrations of that organ. The same might be said with still greater force with regard to the spleen.

^b Hubert Luschka. *Die anatomie des Menschlichen Bauches*. 1863. P. 269.

organs exert little or no influence in modifying its form. Professor His, who has done so much to give us correct views regarding visceral anatomy, rightly insists that when the kidneys are hardened *in situ* it is not difficult to prove that such a moulding influence does take place, and he especially refers to the impressions which are produced on the surfaces of these organs by the quadratus lumborum, the psoas, the stomach, the colon, and the liver. It appears to me, however, that the form of kidney which he describes is not a very usual one, and, further, that the models which illustrate his description are not in every respect satisfactory.

The kidneys present many slight changes in form according to the amount and the kind of pressure which is exerted upon them by contiguous viscera. In every case, however, and on both sides, there is, on the anterior surface, a point of maximum convexity—a place where the kidney substance is raised in the form of a marked prominence or bulging, which may slowly rise from all sides to a blunt summit, as is usually the case in the left kidney, or which may extend across the anterior surface in the form of a rounded ridge, as happens more commonly in the case of the right kidney. Above and below this eminence the anterior surface falls away towards each extremity in the form of an inclined or sloping plane of greater or less obliquity. These impressed districts indicate pressure exercised on the anterior surface of the kidney in two directions, and the intervening eminence is the result of this pressure and counter-pressure.

Upon the upper inclined plane of the anterior surface of the left kidney is placed the supra-renal capsule, the stomach, and the spleen (Plate, Figs. 4 and 8). These exercise a downward and a backward pressure chiefly through changes in the condition of the stomach, although, no doubt, the diaphragmatic movements produce an indirect influence through both the stomach and the spleen. Upon the inferior

inclined surface of the left kidney the counter-pressure is produced by the intestinal canal, which presses, as a rule, upwards and backwards.

When a number of specimens are examined, it becomes apparent that the position of the intervening eminence or anterior bulging of the left kidney is not always the same. This, to some extent, may be due to the slightly different position on the posterior wall of the abdomen which the organ holds in different individuals, but without doubt it is also due to the different degrees of gastric and intestinal pressure to which the organ is subjected at different times in the same individual.

On the right side the upper inclined surface is occupied by the liver, whilst in contact with the lower inclined area is the colon (Plate, Fig. 7). Here also there may be observed considerable differences in the extent of these areas, and consequently also in the position of the elevated portion of kidney surface which intervenes between them. Leaving out of sight the variations in the position of the kidney in different individuals, these alterations in the extent of the sloping surfaces on the anterior surface of the right kidney are brought about by the changing conditions of the colon, which presses on the kidney in an upward and backward direction. To this pressure the liver can only offer a more or less passive resistance, except perhaps in the case of the slight influence which it conveys in a downward direction from the diaphragm, and in a backward direction from the anterior abdominal wall.

This pressure and counter-pressure, which produces so constant and so marked a conformation of the anterior surface of the two kidneys, must also exercise an important influence in maintaining the organ in its place, and securing it in that part of the abdominal cavity in which it lies.

In speaking of the areas on the anterior surface of each

kidney, I have used the term "inclined plane." This must not be interpreted too literally, because the districts in question are not by any means perfectly flat and even, and the term has been used merely with the view of giving forcible expression to the fact that there is a general slope from a central prominence in an upward and downward direction on this aspect of the kidney.

We shall now examine these sloping surfaces in somewhat greater detail. As already stated, the supra-renal capsule, the spleen, and the stomach are in contact with the upper inclined area on the anterior surface of the left kidney. The supra-renal capsule, as a rule, occupies a narrow district along the inner border from the level of the hilum to the summit of the organ. The spleen is in contact over an area immediately adjoining the outer convex border. The extent of this splenic field is variable—varying not only with the breadth of the renal surface on the spleen, but also with the level which is occupied by the kidney in the abdominal cavity. In some cases the surface of contact does not extend downwards lower than one-third of the length of the kidney (Plate, Fig. 4), but in two cases I have observed it reaching down for at least two thirds of the kidney length (Plate, Fig. 8). As a rule, the spleen produces a marked impression, so that when the kidney is well hardened *in situ*, there is no difficulty in tracing the limits of the splenic contact on the anterior surface. As already mentioned, the models of Professor His show the spleen in contact with the kidney along the outer margin of the latter organ. I have never seen such a relationship.

The pancreas stretches across the left kidney, either immediately above or perhaps exactly over the eminence which intervenes between the two sloping surfaces on the anterior aspect of the kidney, and the area which it occupies is not unfrequently indicated by a faint impression. The supra-renal

capsule, the spleen, and the pancreas cover, as a rule, the greater part of the upper inclined surface, so that only a small triangular interval is left between them, where direct contact between stomach and kidney takes place. The extent of this gastric district varies greatly, but it is, as a rule, considerably smaller than is generally supposed, and I have not observed upon it that concavity referred to by Professor His. In the

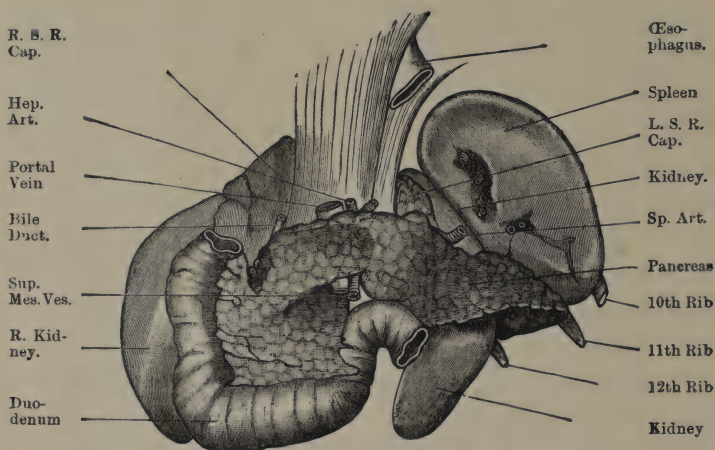


FIG. 4.—Relations of the kidneys as seen in Female Subject B.

reconstructed left kidney of the child the stomach is crowded out altogether by a downward and backward shifting of the supra-renal capsule, and by the great extent of the splenic contact. But these conditions make no difference, in so far as the pressure influence which the stomach exercises upon the upper sloping surface of the kidney is concerned, seeing that the stomach rests upon those organs which are applied to this portion of the kidney, and, as it distends, it presses through them upon the latter organ.

The inferior sloping surface on the anterior aspect of the left kidney has a varying relation to the intestinal canal.

The colon and, as a rule, some coils of the small intestine are in contact with it.

In the case of the right kidney the colic and hepatic impressions are usually very strongly marked, and in many cases the colic or inferior sloping surface presents a high degree of obliquity. The relation of the duodenum is a very variable one, but as I have discussed this point in a previous paper, it is not necessary to re-open the question. When the duodenum rests upon the kidney (which it almost invariably does), it gives rise to a very evident duodenal impression.

The outer convex border of kidney of both sides presents a marked thickening opposite the eminence on the anterior surface. From this it narrows in an upward and downward direction towards each extremity (Plate, Figs. 5 and 6). Somewhere in the neighbourhood of this marginal thickening a faint groove indicates the place where the border of the kidney is clasped by the last rib. It is interesting to note how smoothly and evenly the curved surface of the posterior aspect of the liver merges into the curvature of the outer border of the right kidney (Fig. 1, p. 441). It would therefore be absolutely impossible to tell by percussion where the one begins and the other ends.

In discussing the characters presented by the posterior surface of the kidney, it is necessary to bear in mind that these undergo considerable modification in accordance with the different levels at which the organ is placed on the two sides and in different individuals. I have constructed the following table from the material at my disposal, with the view of forming some estimate of the extent of this variation in the topography of the kidney:—

Position of Kidneys with reference to the Lumbar Vertebrae and the Last Rib.

	RIGHT		LEFT	
	Upper end of Kidney	Lower end of Kidney	Upper end of Kidney	Lower end of Kidney
FEMALE A. Hardened by repeated injections of Müller's fluid and spirit, continued for two weeks.	Half an inch above transverse process of 1st L. V. Lower border of 12th rib extends along outer margin of kidney	Lower border of the transverse process of the 3rd L. V.	One inch above the upper border of the transverse process of the 1st L. V. Upper border of the 12th rib coinciding with outer margin of kidney.	Midway between transverse processes of the 3rd and 4th lumbar vertebrae.
FEMALE B. Hardened by daily injections of Müller's fluid and spirit, continued for a period of six weeks.	Half an inch above upper border of transverse process of 1st L. V. Upper border of 12th rib coincides with the outer margin of the kidney.	Slightly below the lower border of the transverse process of the 3rd L. V.	One inch above upper border of the transverse process of the 1st L. V. Half inch above upper border of the 12th rib.	Upper border of the transverse process of the 3rd L. V.
MALE. Hardened by injections of chloride of zinc.	One inch above upper border of transverse process of the 1st L. V. Kidney lies in front of lower half of the anterior surface of the last rib.	Half an inch below the lower border of the transverse process of the 4th L. V.	One and a half inches above upper border of the transverse process of the 1st L. V. Kidney rises half an inch above the upper border of the 12th rib.	Lower border of the transverse process of the 4th L. V.

Position of Kidneys with reference to the Lumbar Vertebrae and the last Rib.—Continued.

	RIGHT		LEFT	
	Upper end of Kidney	Lower end of Kidney	Upper end of Kidney	Lower end of Kidney
—				
MALE. Model by Professor His.	Half an inch above the upper border of the transverse process of the 1st L. V. Lower border of 12th rib nearly coincides with the outer margin of the kidney.	Upper border of transverse process of the 4th L. V. (?)	One inch and one-eighth above the upper border of the transverse process of the 1st L. V. Upper border of 12th rib very nearly coincides with the outer border of the kidney.	Lower border of the transverse process of the 3rd L. V.
MALE. Model by Professor His.	Two inches above the transverse process of the 1st L. V. Three-quarters of an inch above the upper border of the 12th rib.	Lower border of the transverse process of the 3rd lumbar vertebrae.	One inch above transverse process of the 1st L. V. Kidney rises in front of the lower half of the anterior surface of the 12th rib.	(?)

It will be noticed from the above table that the position of the kidney with reference to the vertebral column is much more constant than that which it presents to the 12th rib. Further, the position of its upper extremity would seem to be subject to much less variation than that of its lower end. The posterior surface of the kidney exhibits two very distinct districts—viz., an internal and an external, which occupy different planes, and which meet along a vertical rounded border (Plate, Figs. 3 and 9). The internal district looks almost directly inwards and is moulded upon the psoas muscle and the crus of the diaphragm. It comprises those portions of the posterior surface which lie above and below the hilum. There is no demarcation of this district into a psoas and a diaphragmatic area. The part below the hilum and the posterior lip of the hilum, as a rule, rest upon the psoas. The internal arcuate ligament crosses the internal district immediately above the hilum, and the portion of this surface which lies above that line is in contact with the diaphragmatic crus.

The rounded ridge which separates the internal district on the posterior surface of the kidney from the external district takes a vertical direction, and corresponds in position to the outer margin of the psoas. In the upper part of the kidney, where the psoas gives place to the crus of the diaphragm, the ridge becomes rounded off, and the separation between the two districts becomes indistinct.

The external district on the posterior aspect of the kidney looks backwards, and is usually divided by an oblique furrow, placed near the upper end, and which proceeds in a downward and outward direction, into a small upper area and a larger lower area. The furrow is sometimes very strongly marked; at other times it is so shallow that it is hardly visible. It corresponds to the *ligamentum arcuatum externum*, and it is apt to be mistaken for a rib depression, seeing

that it is not narrow in conformity with the tendinous cord which causes it, but broad and shallow. When this part of the posterior wall of the abdomen is examined in a well-hardened subject, the rounded elevation corresponding to the external arcuate ligament is clearly visible. In the subjects which I have examined, this faint furrow or depression is much more distinctly marked on the right kidney than on the left; and this is, no doubt, due to the greater support which the left kidney receives from the last rib.

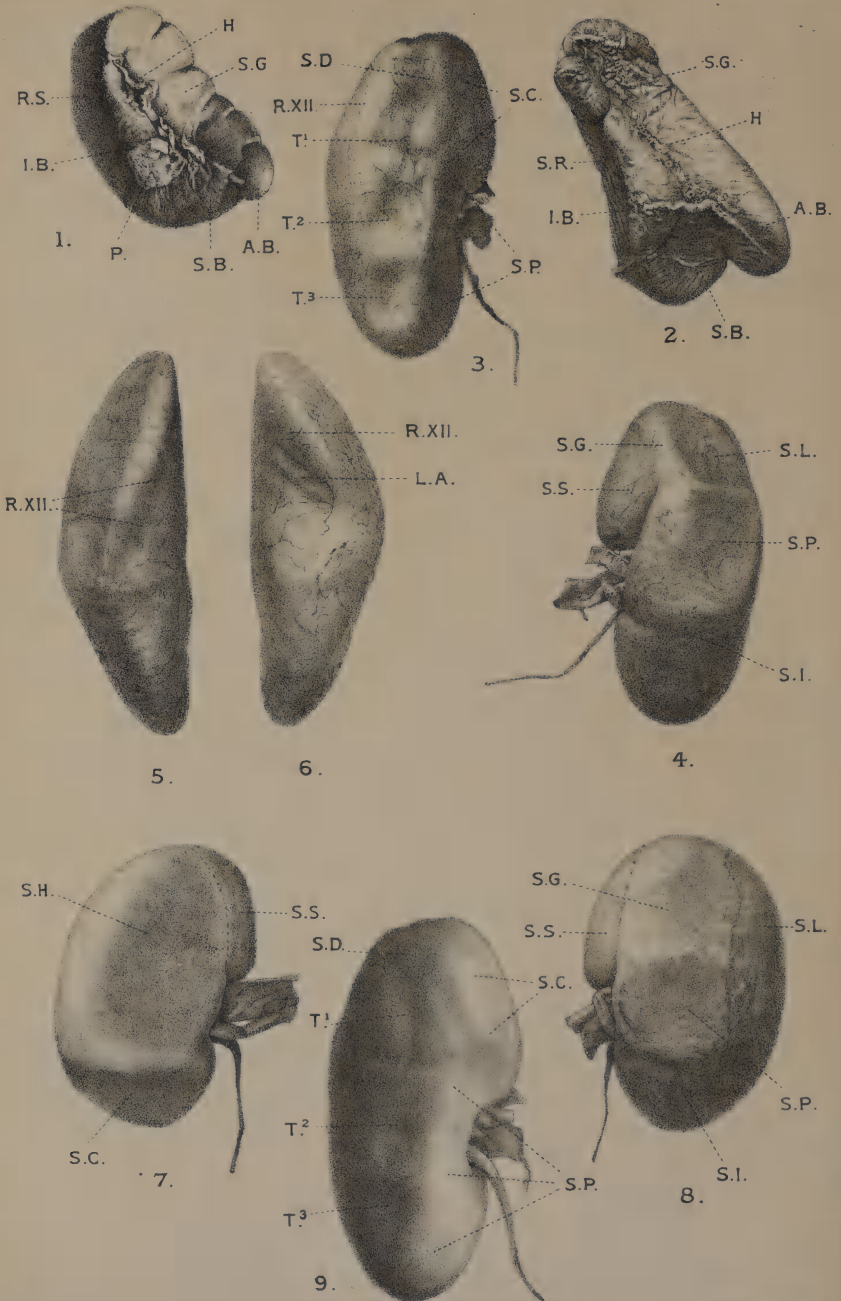
The portion of the external district which lies above the arcuate furrow rests on the diaphragm. This is of greater extent on the left kidney, and it is usually pressed to a greater or less degree forwards, in the manner described by Professor His. It is very imperfectly mapped off from the upper part of the internal district which rests on the diaphragmatic crus. The intervening ridge, as we have noted, becomes rounded off at this level.

The portion of the external district on the posterior surface of the kidney, below the external arcuate ligament, is moulded upon the quadratus lumborum muscle. It comprises much the larger part of this district, and is sharply marked off from the diaphragmatic area above and the psoas area internally.

But on a successfully hardened kidney certain skeletal markings may also be detected on the posterior surface. A narrow oblique impression, which corresponds with the 12th rib, can generally be detected (Plate, Figs. 3 and 9). The position occupied by this differs in the two kidneys, and varies greatly in different individuals. But still further, in many cases the tips of certain of the transverse processes of the lumbar vertebræ produce corresponding dimples on the kidney immediately to the outer side of the ridge which separates the psoas imprint from the quadratus lumborum impression. In muscular and in obese subjects I question

very much if any such depressions on the posterior surface of the kidney occur, but in the two female subjects which I have prepared they are well marked in each of the four kidneys. In both kidneys taken from subject A the tips of the 1st, 2nd, and 3rd transverse processes produce the dimples; in the case of subject B the right kidney is marked by the tips of the 1st, 2nd, and 3rd transverse processes, whilst the left kidney is dimpled by the 2nd and 3rd only.

Anyone who studies the changing forms of the viscera in the abdominal cavity cannot fail to observe the truth of Professor His's remarks regarding the part played by the hollow viscera in moulding the form of the solid organs. The hollow viscera are the active agents in this work, and the solid organs are as the passive clay in the hands of the modeller. Whether, under any circumstances, it is possible for a solid organ to impress a hollow viscus, such as the stomach, is a question which is difficult to answer. For my own part I am inclined to consider such a reaction impossible, or, at least, improbable. And this I say in direct opposition to the testimony afforded by my reconstructed model of the stomach. In this model the wall of the stomach where it is nipped between the liver and the spleen shows one or two wrinkles, and the projections on the notched border of the spleen are sunk into corresponding depressions in the stomach wall. This condition I am inclined to regard as being due to *post-mortem* relaxation of the coats of the stomach. That hollow viscera exercise a moulding influence on each other no one will question. The empty bladder is frequently impressed by the intestine which lies upon it, and, further, the coils of the small intestine, notwithstanding their constantly changing form, not only fit into each other with the greatest nicety, but also, to some extent, adjust their outlines to the opposing surfaces of the solid viscera.



From Photo.

F. Huth, Lith^y Edin^g

EXPLANATION OF PLATE.

FIG. 1.—The spleen of an advanced human foetus ; hardened *in situ* by the chloride of zinc method.

FIG. 2.—The spleen of a Bonnet monkey.

Lettering common to Figs. 1 & 2.

S.G.—Superficies gastrica.

S.R.—Superficies renalis.

S.B.—Superficies basalis.

A.B.—Anterior basal angle.

I.B.—Internal basal angle.

H.—Hilum.

P.—A portion of the pancreas.

FIG. 3.—Posterior surface of the left kidney of female subject B ; hardened *in situ* by Müller's fluid and spirit.

S.P.—Impression for the psoas muscle.

S.C.—Impression for the crus of the diaphragm.

S.D.—Surface in contact with the diaphragm immediately above the external arcuate ligament.

R.XII.—Slight impression for the last rib.

T¹, T², T³.—Dimples corresponding to the tips of the transverse processes of the 1st, 2nd, and 3rd lumbar vertebræ.

Note the vertical ridge which separates this surface of the kidney into an internal and an external district.

FIG. 4.—Anterior surface of the left kidney of female subject B.

S.S.—Impression for supra-renal capsule

S.G.—Area in direct contact with the stomach.

S.L.—Impression for the spleen.

S.P.—Impression for the pancreas.

S.I.—Inferior inclined surface.

FIGS. 5 & 6.—Outer convex borders of the right (Fig. 6), and left (Fig. 5) kidneys of female subject B.

Note the wedge-shaped outline of the kidneys when viewed from this aspect ; also the central prominence and the two inclined surfaces on the anterior aspect of each.

R.XII.—Impression for the last rib.

L.A.—Groove for the ligamentum arcuatum externum on the right kidney.

FIG. 7.—Anterior surface of the right kidney of the female subject A ; hardened *in situ* by Müller's fluid and spirit.

S.S.—Impression for supra-renal capsule.

S.H.—Hepatic impression.

S.C.—Colic impression.

FIG. 8.—Anterior surface of left kidney of the female subject A. Lettering same as in figure 4.

FIG. 9.—Posterior surface of left kidney of the female subject B. Photographed from a slightly different point of view from that adopted in the case of Fig. 3. The internal and external districts are more distinctly exhibited. Lettering the same as in Fig. 3.

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